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AEROPLANE

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THE FEW

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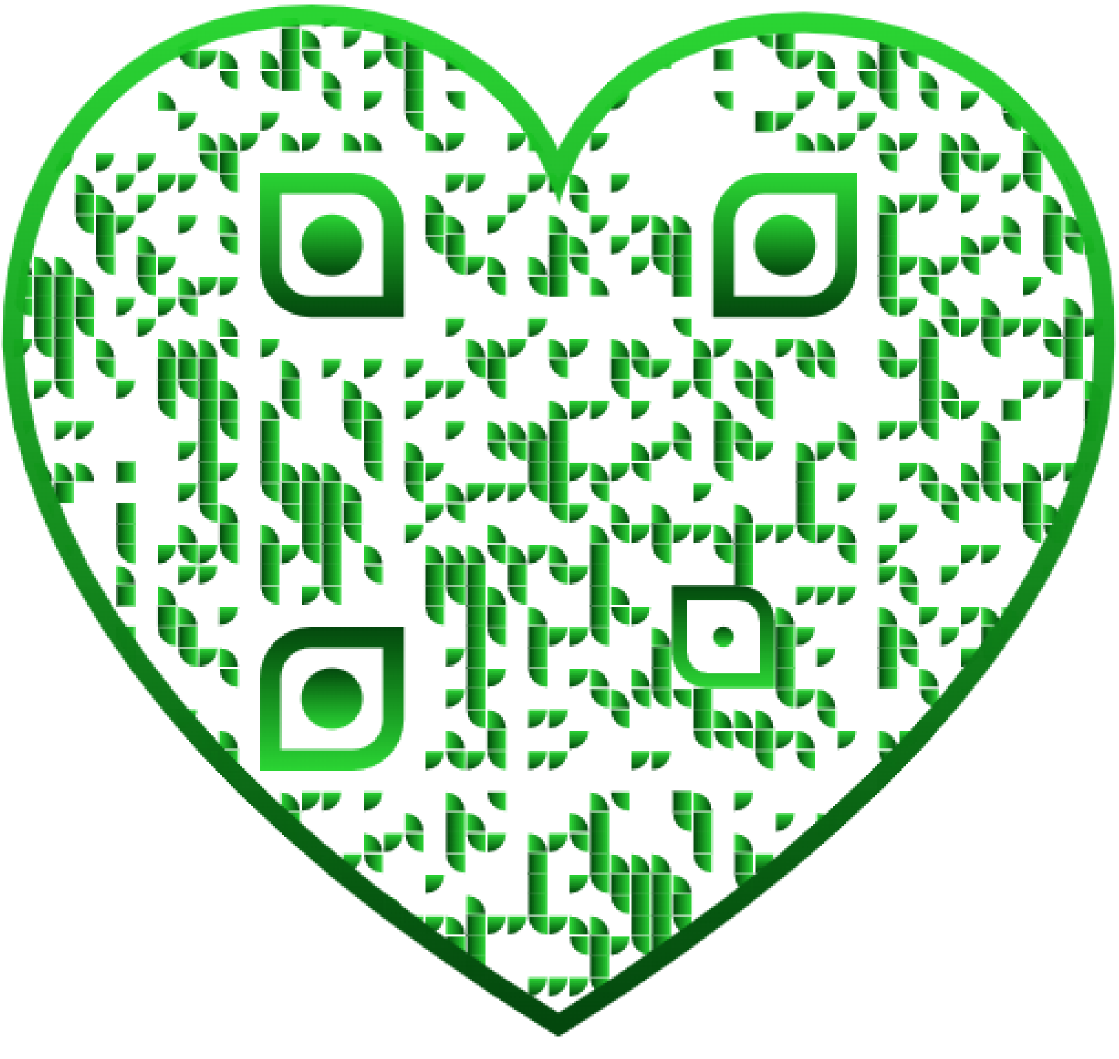

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December 2025

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COVER IMAGE:
Hurricane I P3351 in its new No 310 (Czechoslovak) Squadron markings, owned by the Letecké Muzeum Točná. DARREN HARBAR

From the Editor

CONNECT WITH *AEROPLANE*...
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What's the most important cause in UK aircraft preservation today? Each of you reading this will have your own ideas. But as we come towards the end of a year which has seen major change afoot at the country's biggest museums, I know where my priority lies. Over the course of 2025 we have seen a Comet 4, a York, an Andover and a Varsity being forced to live outdoors, a Comet 1 — as I bemoaned last month — most likely rendered incomplete forever as a result of years spent outside with insufficient upkeep and a very questionable decision to dispose of the airframe, and an Argosy which, while still indoors, shorn of substantial sections which may never be reattached. To me, while appreciating the difficulties involved in finding space for large aeroplanes, it practically beggars belief that we are seeing such retrograde steps in the treatment of exhibits like these. I sincerely hoped the days of more such aircraft being forced to languish in the wet and cold might have passed. How wrong I was.

Far too many airliners, military transports and the like, whether in national or privately owned collections, lack suitable accommodation. The plight of commercial types is, as I've reflected here many times, especially acute. Leaving aside the Science Museum's stored airliner inventory at Wroughton, to which renewed public access remains a distant prospect, very few enjoy a roof over their heads. Many are far rarer and more significant survivors than, say, one of the numerous surviving Vulcans. But where will the funds, and the space, come from?

I fundamentally believe it is time leading representatives across the UK's aviation museum sector came together in a constructive way to explore a co-ordinated approach. How can these hugely important aircraft be given a more secure outlook, and a potential future crisis in their preservation averted? Otherwise, even with the superb work now being done to conserve them to the best possible standard, it won't just be a Comet 1's wings we have to say goodbye to.

The *Aeroplane* team was deeply saddened this month to learn of the death of Peter Arnold, doyen of Spitfire historians and a regular contributor to these pages. He leaves an irreplaceable gap, having occupied a unique, self-forged place in the aviation heritage world. Tony Harmsworth pays tribute in the news section; his last feature for us, about the formative days of the Battle of Britain Memorial Flight, appears inside. To say Peter will be sorely missed barely makes a start on it. Our condolences to his family and friends.

Finally, an apology. It was incorrect in the October issue for us to have referred to "the late Jeremy Hall" — he is still very much alive, and continuing with his own Lancaster project, which we look forward to featuring in future. Very sorry, Jeremy.

Ben Dunnell

AEROPLANE
ESTABLISHED 1911

Aeroplane traces its lineage back to the weekly *The Aeroplane*, founded by C. G. Grey in 1911 and published until 1968. It was relaunched as a monthly in 1973 by Richard T. Riding, editor for 25 years until 1998.

THE AEROPLANE
TRIPLEX Safety GLASS

CONTRIBUTORS THIS MONTH

PETER R. ARNOLD

The late Spitfire historian, who died in October, was the font of all knowledge on the type and supremely generous in sharing it. The last article he wrote for us focused on how the type progressed out of 'regular' RAF service and into airworthy preservation — a story of individual efforts eventually coalescing into one of our most beloved aviation heritage institutions. It seemed fitting to include it in our special section this month on Battle of Britain commemorations in this anniversary year.

JAN FORSGREN

Very sadly, this is the final Database by Jan that we'll run, following his death during September, reported in last month's editorial. This very prolific Swedish aviation historian and researcher wrote many books and countless articles, as well as volunteering at the Arlanda Civil Aviation Collection. Fittingly, the Database on the Saab 105 completes his run of detailed coverage in our pages of the Swedish maker's main military projects, as he'd already done the Saab 17, 18, 21, 29 'Tunnan', 32 Lansen, 35 Draken and 37 Viggen.

ROBERT S. GRANT

Robert's childhood summers in a small northern Canada town encouraged his interest in wilderness aviation. At the age of 16, his father forced him to enrol in flying lessons at the Prince Edward Flying Club, west of Toronto. Years later, he has logged more than 20,000 accident-free flying hours in Canada and countries around the world. When not driving aeroplanes, he has published thousands of articles in six countries and has several books on the market.

BOB O'BRIEN

Says Bob, "My local airport, Liverpool Speke, had a brilliant viewing balcony where I would meet up with the likes of Gerry Manning and Phil Butler to talk about aircraft. After I left college I went out to Australia for a few years via a BOAC Boeing 707. A few years later I returned, flying with the wonderful Cambrian Airways as cabin crew on Viscounts and One-Elevens. In 1976 I joined BA long-haul and spent the next 42 years crossing the globe on all variants of the 747 and later 777s. These days I specialise in the Viscount and Harold Bamberg's British Eagle."

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News

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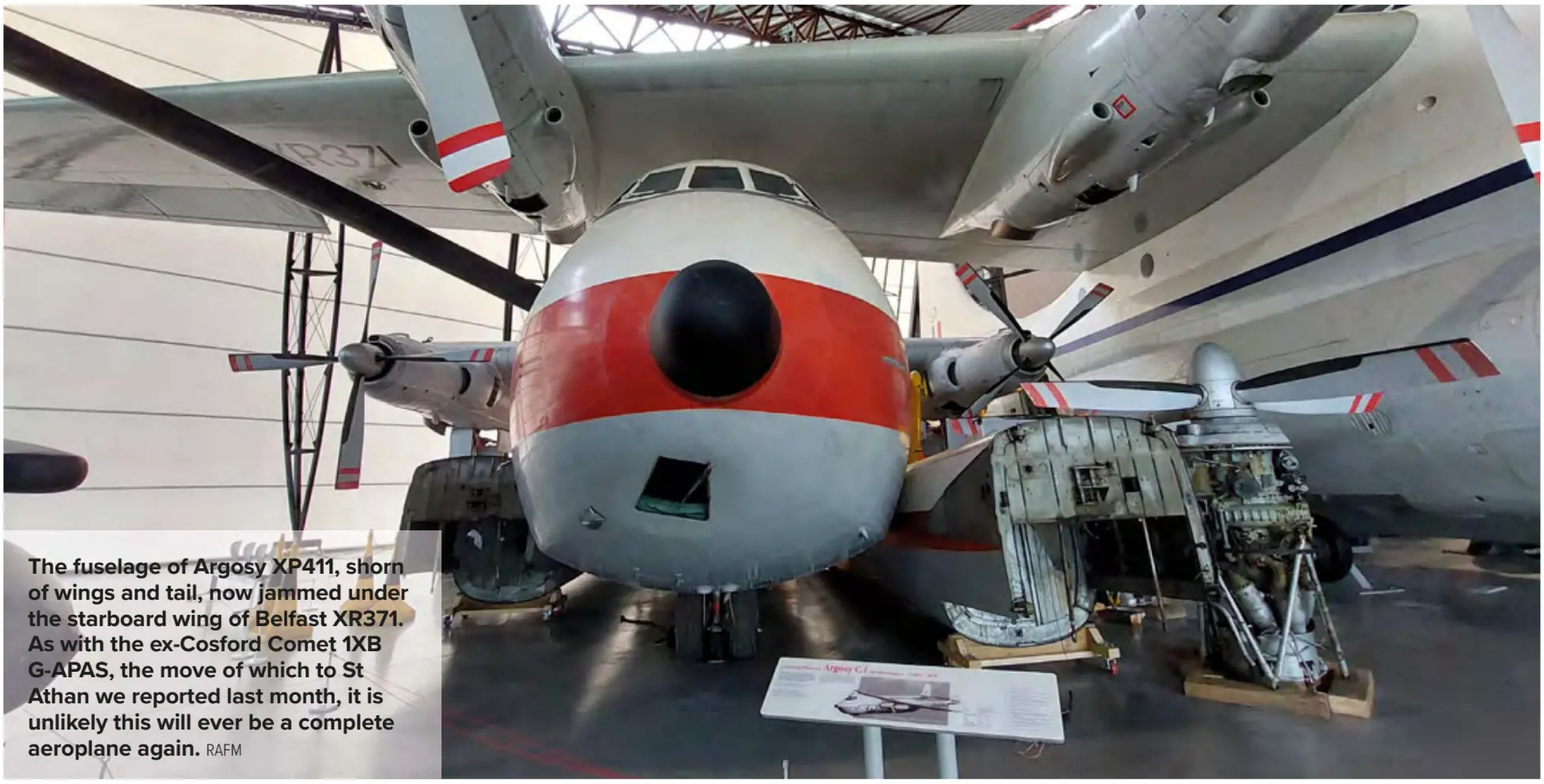
All change for RAFM transports



The fuselage of Argosy XP411, shorn of wings and tail, now jammed under the starboard wing of Belfast XR371. As with the ex-Cosford Comet 1XB G-APAS, the move of which to St Athan we reported last month, it is unlikely this will ever be a complete aeroplane again. RAFM

During early October the ongoing RAF Museum Midlands development programme at Cosford saw Hawker Siddeley Andover E3A XS639, Vickers Varsity C1 WL679 and Armstrong Whitworth Argosy T1 XP411 moving out of their long-term home in Hangar 1. The Andover is the sole example of the type preserved in the UK, and is henceforth permanently on show outside.

The Argosy — the only one of the three survivors in Britain to be under cover — is now bereft of wings, the fuselage having been shoehorned under the starboard wing of Shorts Belfast C1 XR371 in Cosford's Cold War hangar. During the heavy rains of late October the wings were sitting outside the Michael Beetham Conservation Centre.

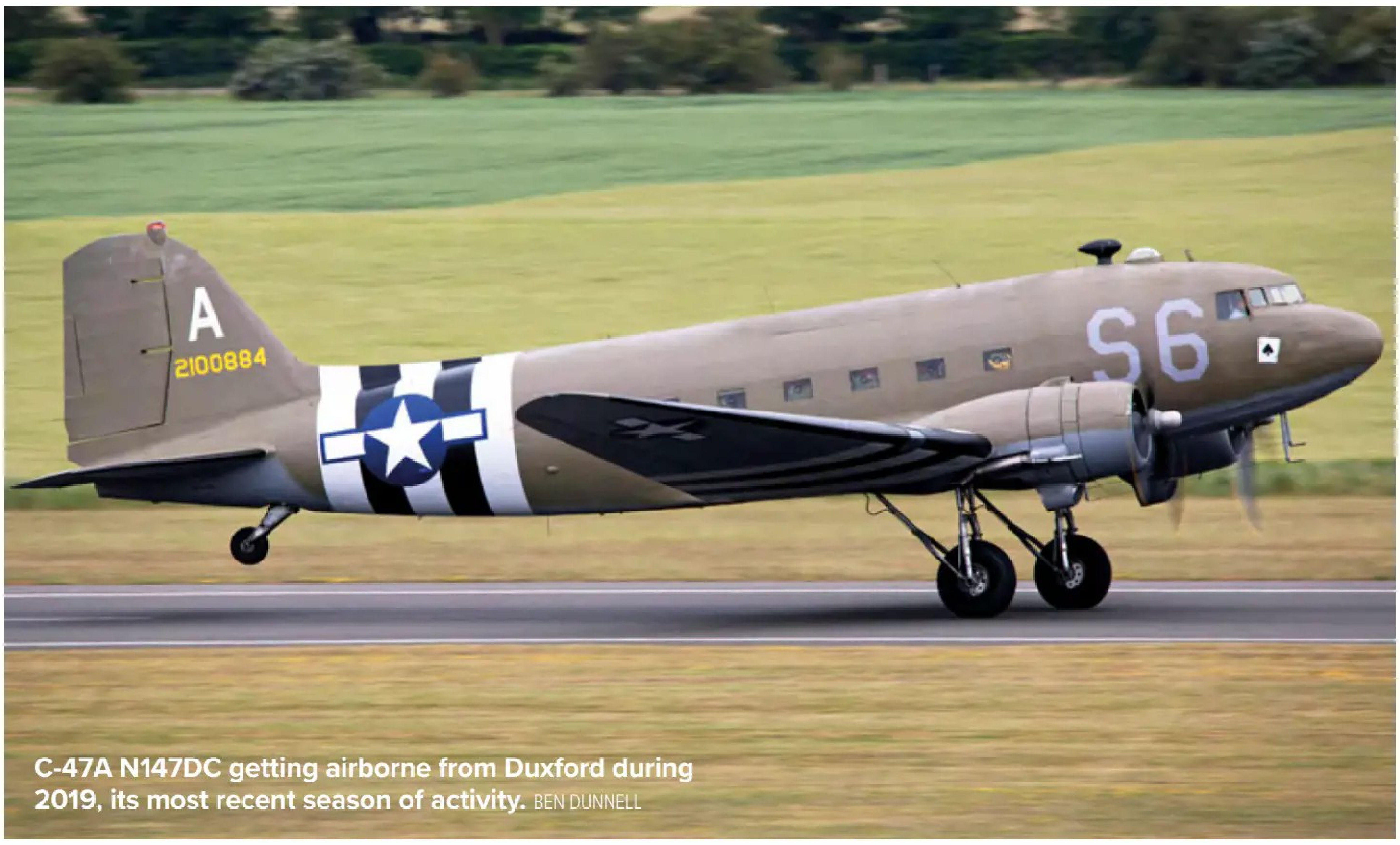
Two other long-standing Cosford residents that were recently moved south, Scottish Aviation Twin Pioneer CC2 XL993 and Percival Pembroke C1 WV746, went on display in the RAF Museum London at Hendon in early October.

In addition, one of the long-standing members of Cosford's once outstanding collection of flight test aircraft, Short SB5 WG768, was being dismantled at the Shropshire airfield as we went to press, bound for a new home as part of the Ulster Aviation Society's museum at Long Kesh. More on this story next month.

The only surviving Andover in the UK has been evicted from Cosford's Hangar 1, as has Varsity WL679 alongside, and now faces gradual decline at RAFM Midlands. RAFM

Pembroke WV746 and Twin Pioneer XL993 have been moved from Cosford and reassembled in the RAF Museum London at Hendon. TONY HARMSWORTH

UK's screen star 'Dak' heading to USA



C-47A N147DC getting airborne from Duxford during 2019, its most recent season of activity. BEN DUNNELL

The longest-serving Douglas C-47 'warbird' in the UK, C-47A 42-100884/N147DC, operated by aviation film company Aces High since 1979, has been sold to a new owner in the US. It will leave Britain after a series of farewell airshow appearances during the spring/early summer of 2026. Although it was built at the Douglas plant in Long Beach during 1942, this is thought to be the lowest-time airworthy DC-3/C-47 in the world, with just over 3,500 hours on the airframe.

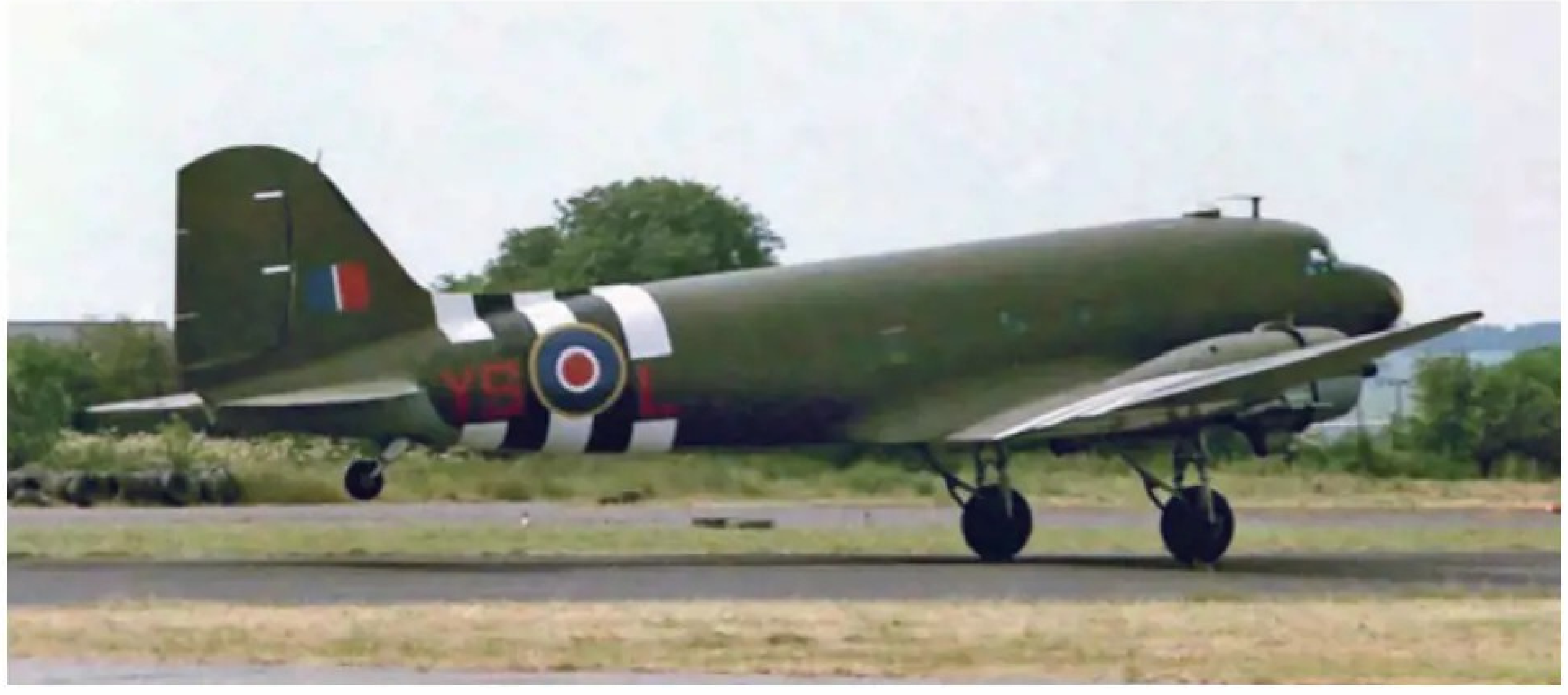
The machine flew with the US Army Air Forces' 79th Troop Carrier Squadron from Membury, Berkshire during D-Day, and was soon transferred to the RAF and delivered to the Heavy Glider Unit at Netheravon as TS423, a Dakota III. It then became one of the few Dakota glider snatch recovery aircraft to serve with the RAF. Shortly before the end of the war TS423 went to No 436 Squadron, Royal Canadian Air Force at Down Ampney.

Following hostilities TS423 was operated by a succession of legendary companies: Short Brothers, Scottish Aviation, Marshalls of Cambridge and Ferranti, the latter fitting it with a 'thimble' nose, behind which the experimental AI23 AIRPASS radar for the English Electric Lightning was tested. During 1969 it went to RAE West Freugh, western Scotland for use with the Ministry of Technology. Somebody at the Ministry of Defence decided in 1978 to send the historic combat veteran to the Catterick fire dump and inevitable oblivion, before former Intra Airways and Air BVI DC-3 pilot Mike Woodley of Aces High made a rescue bid, with the help of the Imperial War Museum and the Conservative hereditary peer the Earl of Onslow.

Registered G-DAKS in September 1979, the C-47 was converted back to its original configuration at Duxford, making its TV and film debut in January-February 1982 in the Yorkshire Television series *Airline* as one of two Ruskin Air Services DC-3s, bearing the name *Vera Lynn* on the nose.

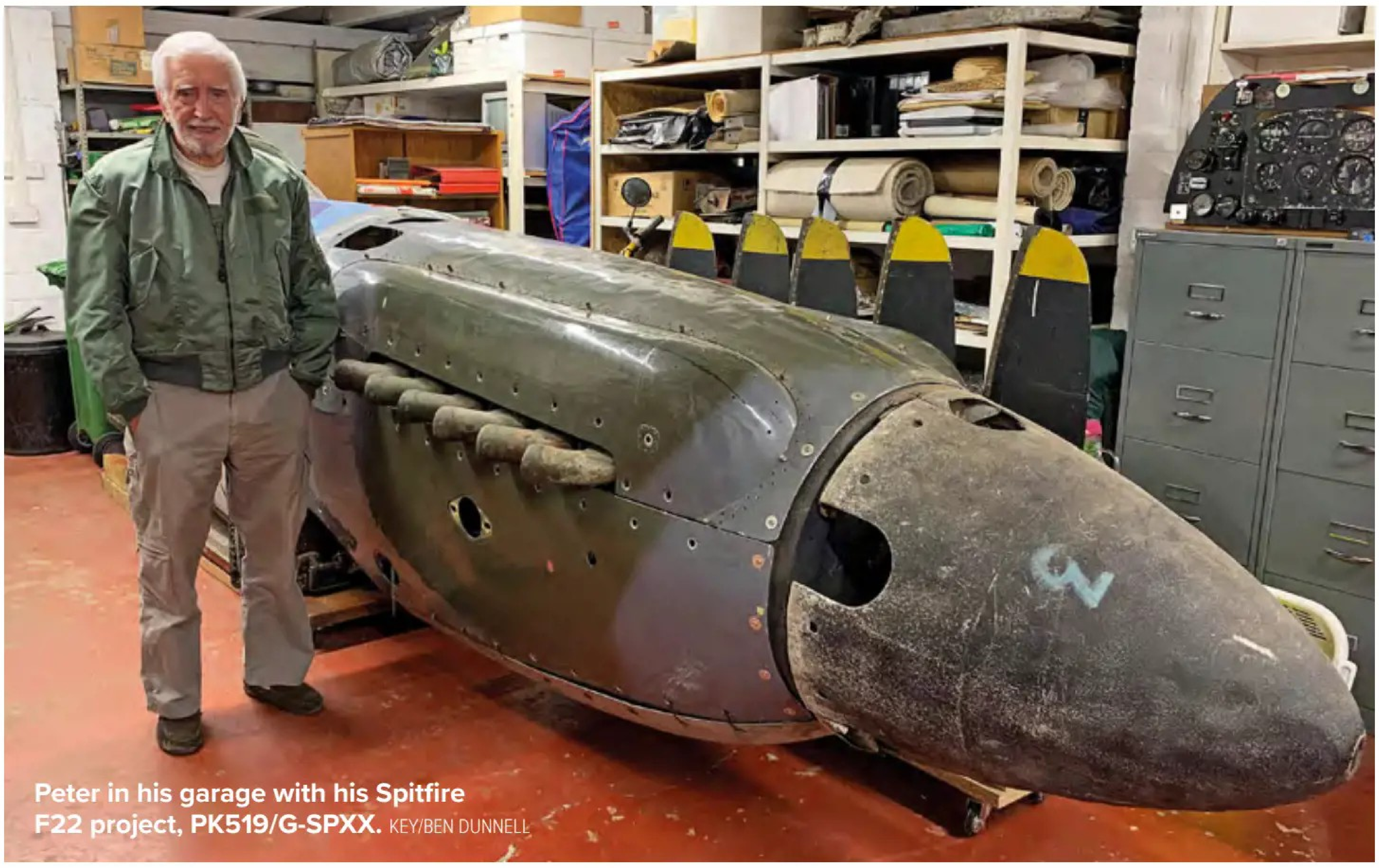
Subsequent credits must make G-DAKS, re-registered N147DC in 1998, the most illustrious of all filmed Douglas propliners. TV series include *Poirot*, starring David Suchet, and the Japanese prisoner of war camp drama *Tenko*. Among its feature film appearances were the James Bond film *Quantum of Solace*, *The Monuments Men*, *Indiana Jones and the Last Crusade*, *Allies*, *The Dirty Dozen: Next Mission*, *Memphis Belle*, *The Da Vinci Code*, *White Hunter Black Heart*, the 2017 biographical Winston Churchill feature film *Darkest Hour* starring Gary Oldman, the remake of *Catch-22*, *Saving Private Ryan*, *Band of Brothers*, *Land Girls* and *Red Tails*.

The then G-DAKS makes a low pass at Rufforth, North Yorkshire for the TV cameras during the production of the Yorkshire Television series *Airline* in 1981. KEY COLLECTION



At North Weald during June 1986, G-DAKS wears the markings of the Dakota in which Flt Lt David Lord and his No 271 Squadron crew were lost on a resupply drop during the Battle of Arnhem. DICK GILBERT

Peter Arnold 1941-2025



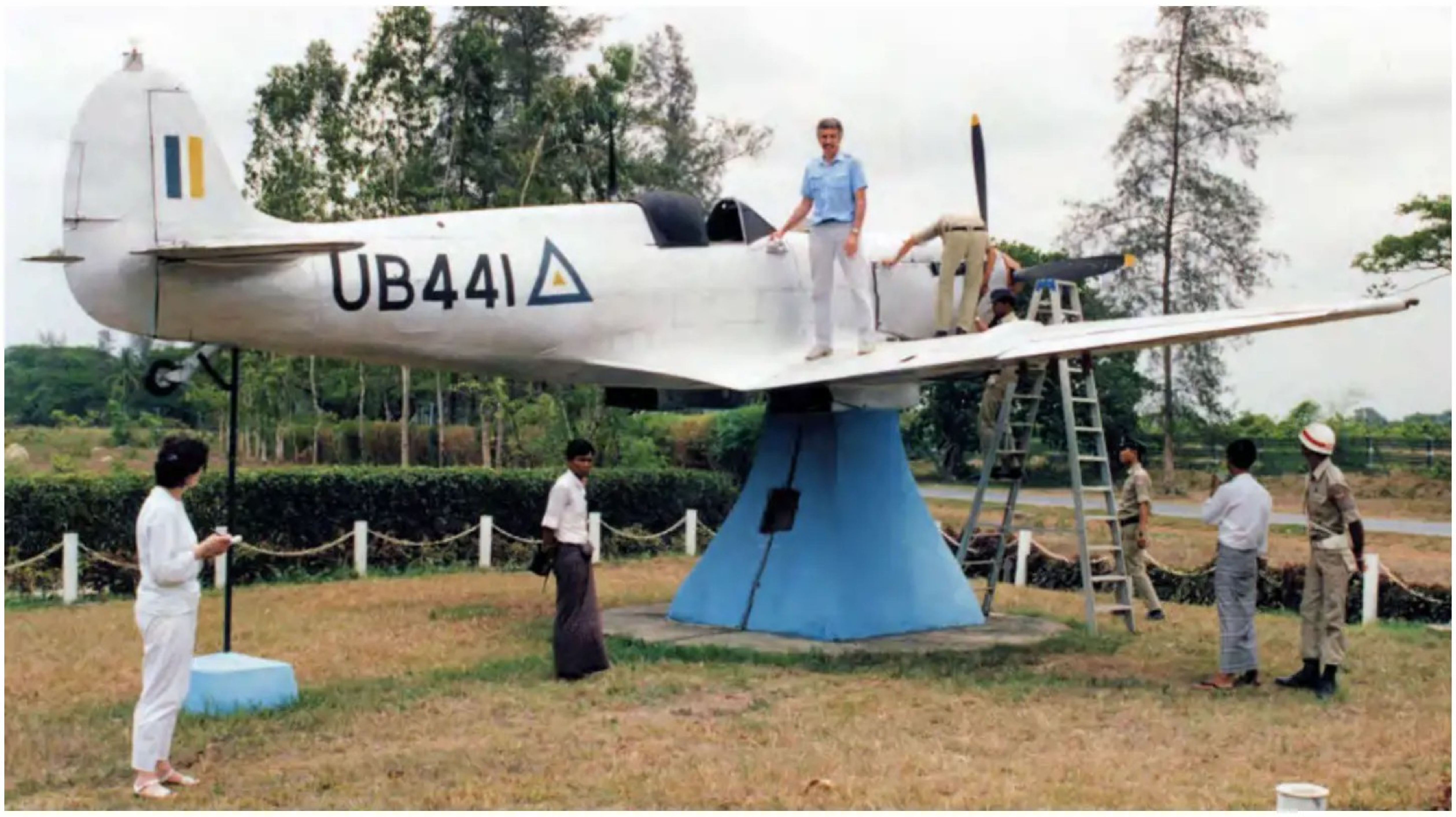
Peter in his garage with his Spitfire F22 project, PK519/G-SPXX. KEY/BEN DUNNELL

The doyen of Spitfire historians, Peter Arnold, passed away at the age of 83 during October in Newport Pagnell.

Known as ‘Mr Spitfire’ to enthusiasts, aircraft collectors and writers alike for his unrivalled knowledge on Supermarine’s finest, Peter was born in Wembley during December 1941 but brought up in South Harrow, just north-east of RAF Northolt. Among his formative influences was the Queen’s coronation flypast, which Peter witnessed at the age of 11, and a stained-glass window depiction of the Supermarine S6B racer at Harrow County Grammar School where he was a pupil, Schneider Trophy-winning pilot John Boothman being a Harrow Grammar ‘old boy’.

Peter was to go onto a highly successful career in automotive engineering, being employed by Aston Martin where he knew car designer William Towns and legendary engine designer Tadek Marek, and later by General Motors as a development engineer for Vauxhall cars and Bedford military vehicles. He also worked at Banbury-based motorsport and advanced technology company Prodrive — set up by 1981 world champion rally co-driver David Richards — and the Aston Martin subsidiary Tickford, where he was chief chassis engineer until taking early retirement in 2002. Peter regularly got behind the wheel while testing cars at the General Motors Millbrook Proving Ground near Bedford and the MIRA Road Research Track near Nuneaton.

While still at school, Peter had become fascinated by Second World War aircraft, and particularly Spitfires. For the August 2023 ‘*Aeroplane* meets’ feature, Peter recalled, “My friend Trevor Tew and I began to look for them. We knew about gate guardians, but where could we go and see them? We started to hear about one here, one there. Anything within about a 50-mile radius, we would set off for on our bikes in the morning and arrive tired at night. Gradually we were writing a little list of where all these gate guardians were. We joined Air-Britain, which led us to more of them.”



Over the course of five visits, one of Peter’s proudest achievements was to crack the case of the Burmese Spitfire/Seafire identities. He stands atop Spitfire IX ML119 at Mingaladon on 27 May 1987, his wife Kay (left) on stand-by to write down the dataplate numbers and RAF serial. PETER R. ARNOLD COLLECTION

At Halton, Peter crawled all over the de Havilland Mosquitos, Gloster Meteors and Supermarine Swifts in the scrap area, and found Spitfire XVI RW386 in a hangar. “Scrapyards had a fascination”, he remembered. At International Alloys’ yard in Aylesbury, he saw and photographed Avro Lancasters and Lincolns, Bristol Brigands, a Vickers Wellington and a Hawker Tempest. The famous Coley’s premises in Hounslow revealed more rarities including the second prototype Armstrong Whitworth Scimitar, G-ADBL. Once he started work as an apprentice draughtsman and had his own motorised transport, the radius of his visits was greatly extended.

During March 1973 Peter rescued the fuselages of Seafire

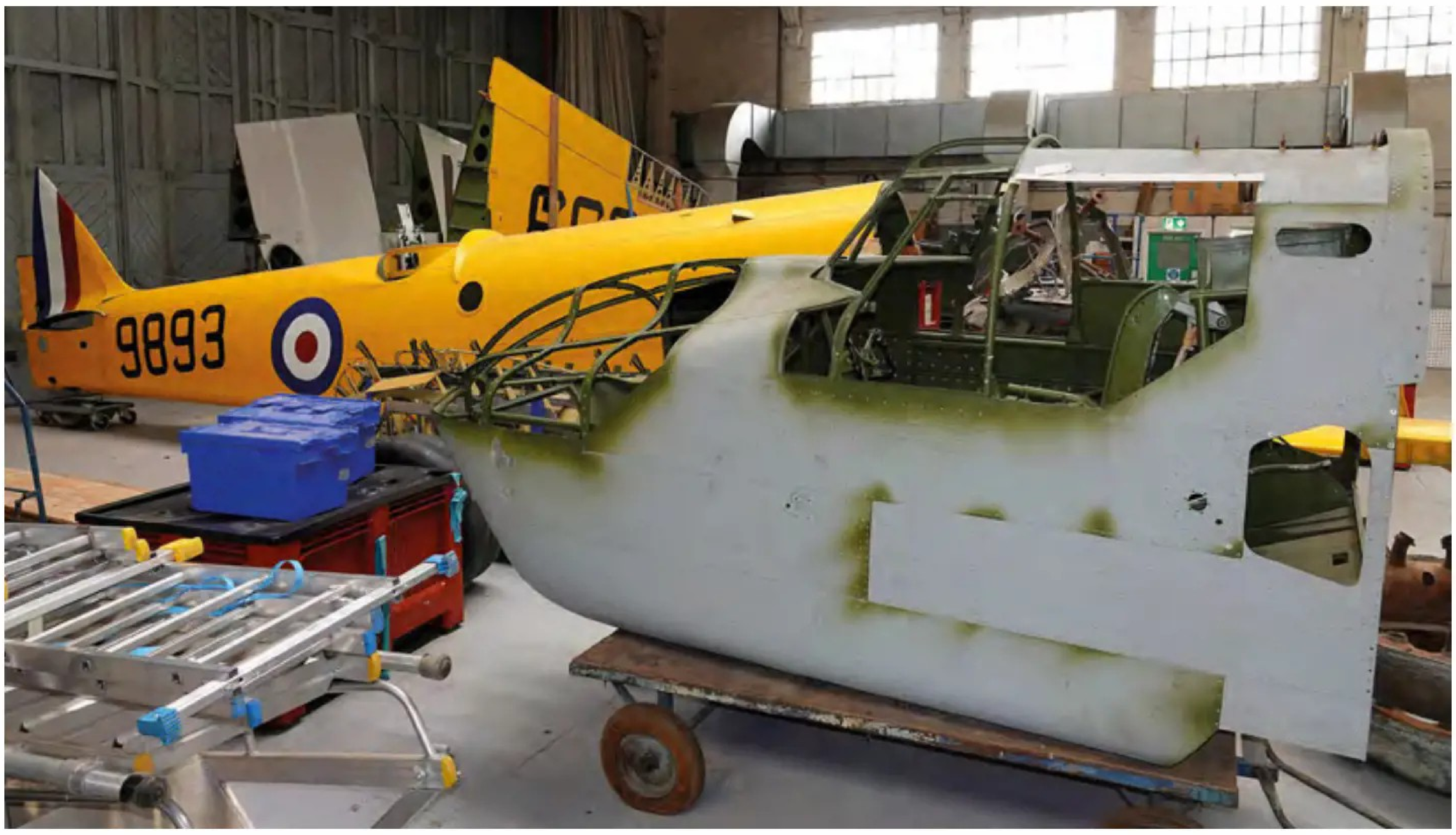
XVIIs SX336 and SX300 from a scrapyard in Warrington. '336 is now airworthy with Navy Wings, and SX330 is under restoration to fly with Seafire Displays at Old Warden, as is Seafire F46 LA564, which Peter secured later that year. June 1973 had seen the acquisition of the remains of Spitfire FXII EN224, which is currently being restored to fly by Air Leasing at Sywell, and when finished will be the only complete MkXII — Supermarine test pilot Jeffrey Quill's favourite variant of the type — in the world.

Over the years Peter's commitment to chronicling surviving Spitfires worldwide saw him record some 365 extant Spitfire and Seafire airframes, whether complete, incomplete or wrecks, of which his inspections and analysis proved able to identify or confirm the military serials of around 75.

His dedication to the cause of preservation also saw other, rarer types come to the UK. During 1992 a deal Peter put together with Canada-based Jeet Mahal saw the RAF Museum obtain Handley Page Hampden TBI P1344, which had been recovered from the site of its September 1942 forced landing during 1991. The fuselage went on display at Hendon in September (see News, *Aeroplane* November 2025).

Peter, often accompanied by his wife Kay — they were married for 61 years — was known in many quarters as the Indiana Jones of aviation historians, having visited an incredible 134 countries on his travels. Although his involvement with Spitfires proved quite lucrative on occasion, money was never Peter's motivation. "I'm not running a business", he said. "I enjoy helping people". At the time of his passing, Peter still had one remaining project in the garage at his Newport Pagnell home: Spitfire F22 PK519, which he registered as G-SPXX. Recovered from Larkhill where it saw use as an artillery range target, Peter had acquired a plethora of parts over the years to incorporate into this composite rebuild, and in August 2003 he commented, "I just like it being here."

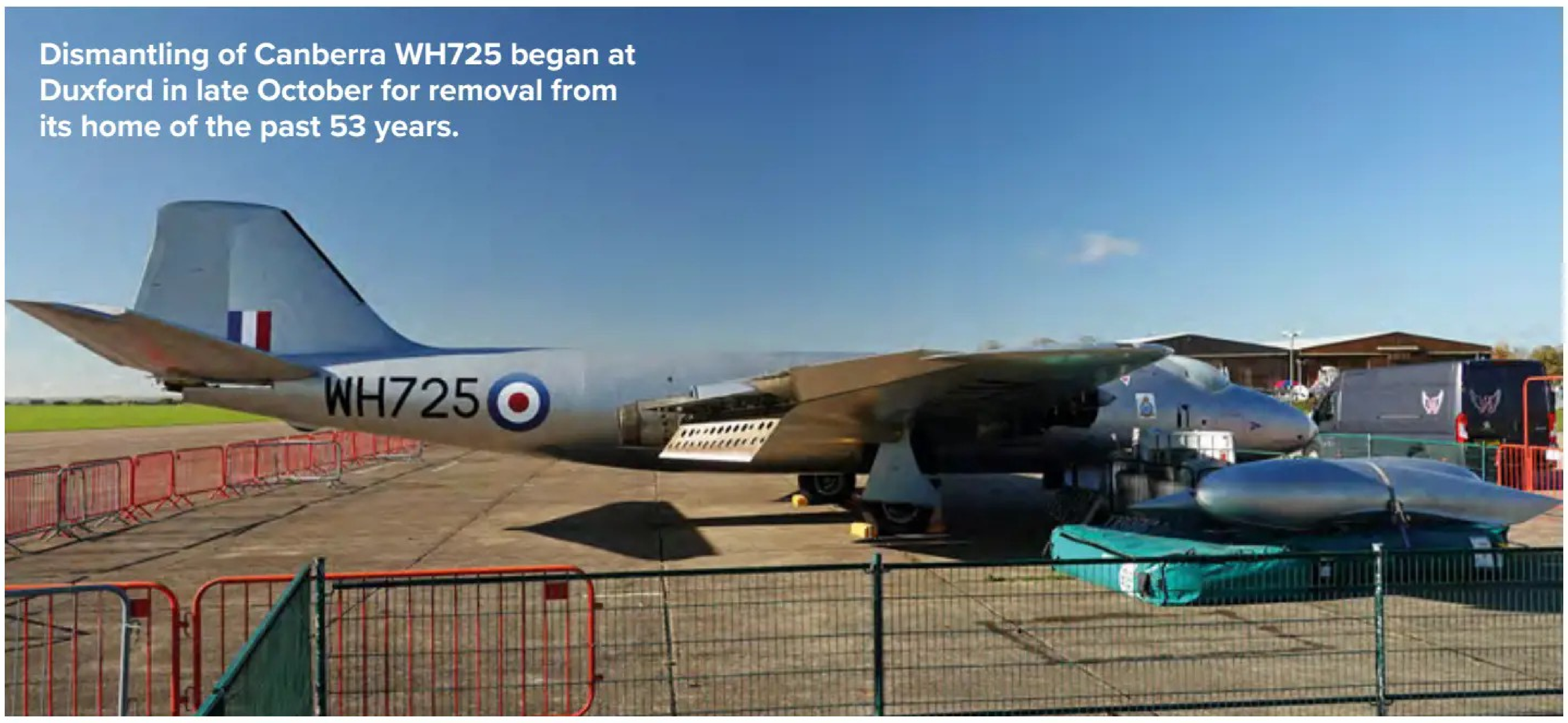
Duxford departures step up


Part-restored ex-Royal Canadian Air Force Bolingbroke IVT 9893, owned by the IWM, is set to leave Duxford's Hangar 5 soon and head north for completion of its restoration and future public display at an as yet un-named museum.

The Imperial War Museums' part-restored Bristol Bolingbroke IVT is set to soon leave Duxford's Hangar 5, heading for a currently undisclosed museum, said to be in the north of England. Restoration of the airframe, which is marked as RCAF 9893, was undertaken on a limited budget with the intention of the finished machine going on display in the AirSpace building, but work was suspended before AirSpace opened in July 2008 and it was placed in storage in one of the workshops north of the hangars.

Dismantling of another long-term Duxford inhabitant, English Electric Canberra B2 WH725 — which was moved out of AirSpace in May for the reconfiguration of the building as a permanent exhibition dealing with the Cold War — got under way in late October. The 1953-built machine, the only standard example of the B2 that had been on public display anywhere in the UK, was placed on loan to the IWM by its owner, the RAF Museum, way back in 1972. Now reclaimed by the RAFM, the future location of this important airframe remains unclear, with both the RAFM sites at Hendon and Cosford already having relevant examples of the Canberra on show.

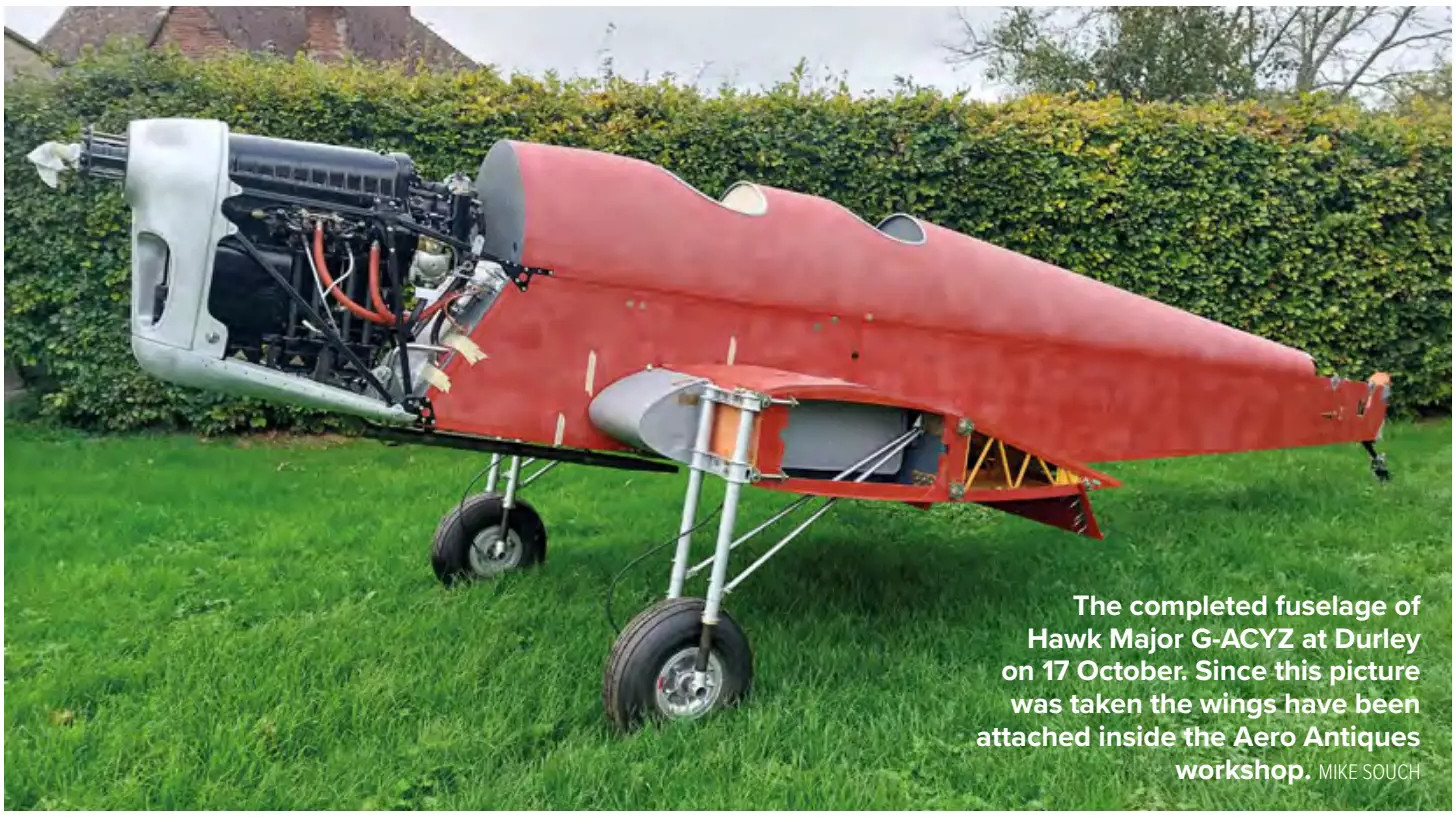
Enquiries from *Aeroplane* to the RAFM at the end of October elicited the following statement: "We can confirm that the RAFM is supporting the IWM as they start to dismantle the aircraft prior to its return to the RAFM as its loan from our national collection comes to an end. RAFM will update further on our plans for displaying the Canberra once they are finalised."


Dismantling of Canberra WH725 began at Duxford in late October for removal from its home of the past 53 years.

Hawk Major rolled out

At the Aero Antiques workshops at Durley, Hampshire, the fuselage of Miles M2H Hawk Major G-ACYZ (c/n 123) was rolled out on 17 October, the experienced team there working its magic on yet another Miles aeroplane. It has previously rebuilt Hawk Speed Six G-ADGP and Whitney Straight G-AERV to flying condition, with Sparrowhawk G-ADNL now also heading towards the end of an exacting airworthy restoration at Durley.

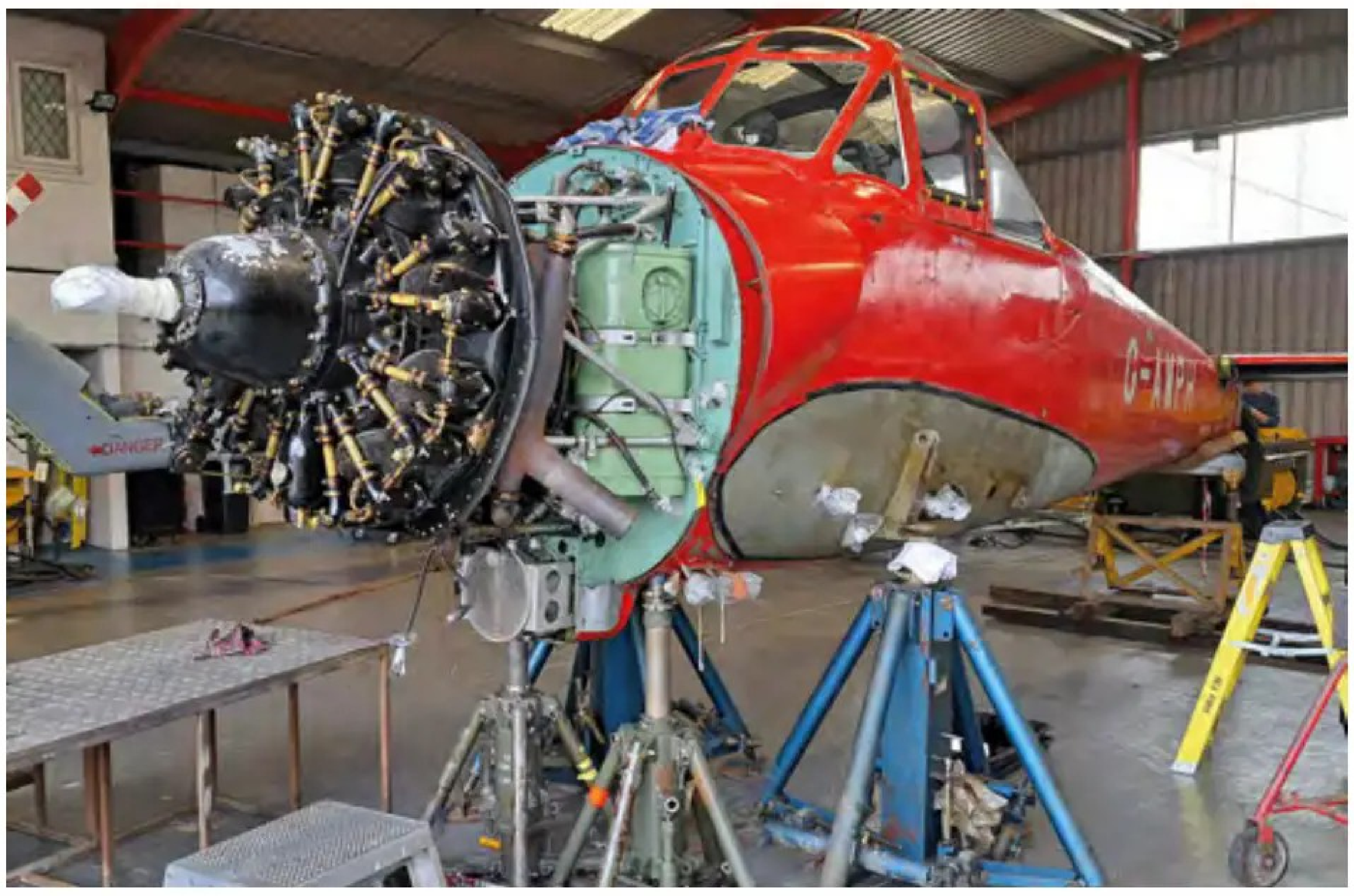
There are currently no examples of the Hawk Major flying in the UK. Constructed at Woodley during 1934, G-ACYZ was sold to an owner in Australia in 1938 to become VH-ACC, and was based at Parafield with the Royal Aero Club of South Australia. The Hawk went into uniform with the Royal Australian Air Force as A37-4 during the Second World War, surviving the rough and tumble of a military career to revert to VH-ACC at the end of hostilities, and being operated mainly in the state of Victoria. It was sold to Canada in 1968 to become CF-AUV. In 2020 a sale back to England saw the Hawk Major once again become G-ACYZ. On arrival at Durley the Aero Antiques team immediately went to work on undertaking a comprehensive restoration of this well-travelled survivor.


The completed fuselage of Hawk Major G-ACYZ at Durley on 17 October. Since this picture was taken the wings have been attached inside the Aero Antiques workshop. MIKE SOUCH

Provost to fly again as tribute to John Bradshaw

Former British Airways Concorde captain John Bradshaw, known on the airshow scene for many years as the owner-pilot of Percival Provost T1 G-AWPH and Hawker Fury ISS G-CBEL, died on 3 October aged 94.

Having started out an apprentice engineer with Hunting Aircraft just after the war, John joined the RAF and trained as an engine fitter at Halton. Becoming a pilot, he flew Venoms operationally in Germany in the early 1950s before becoming a Central Flying School instructor. He was to return to the air force in 1990 as an RAF Volunteer Reserve officer when the outbreak of the Gulf crisis created a shortage of qualified flying instructors in the training units, flying Bulldogs with the University of London Air Squadron and Jet Provosts for ATC trainees at Shawbury.


Provost G-AWPH being overhauled at North Weald during late September, preparatory to a return to flight next year. VIA MIKE LIVERMORE

His civil flying career began in 1957 as a BOAC second officer on the Douglas DC-7C, progressing to the VC10 on which he gained his captaincy. During his time on Concorde, in 1983 John flew from New York to London in two hours 56 minutes 35 seconds, a record for a west-east crossing that stood for almost 20 years. He retired as a senior captain in 1985.

Back in 1968, John had obtained Provost WV420, the first production example, and registered it as G-AWPH, making it the first to be transferred to the civil register. In the red-and-black civilian-schemed trainer he appeared at many displays and won the 1971 King's Cup Air Race. During 1990 he augmented it with freshly overhauled ex-Iraqi Air Force Fury ISS N36SF, which he sold to an Australian buyer in 2009. Now back in the UK, the Fury is owned by Fighter Aviation Engineering and registered G-CBEL.

The Provost stayed in John's ownership, its most recent permit to fly only expiring in 2018, though it did not appear in public for a long time. It has now re-emerged and is undergoing maintenance at North Weald to enable a return to flight during 2026 as a tribute to its former owner.

Ben Dunnell and Mike Livermore

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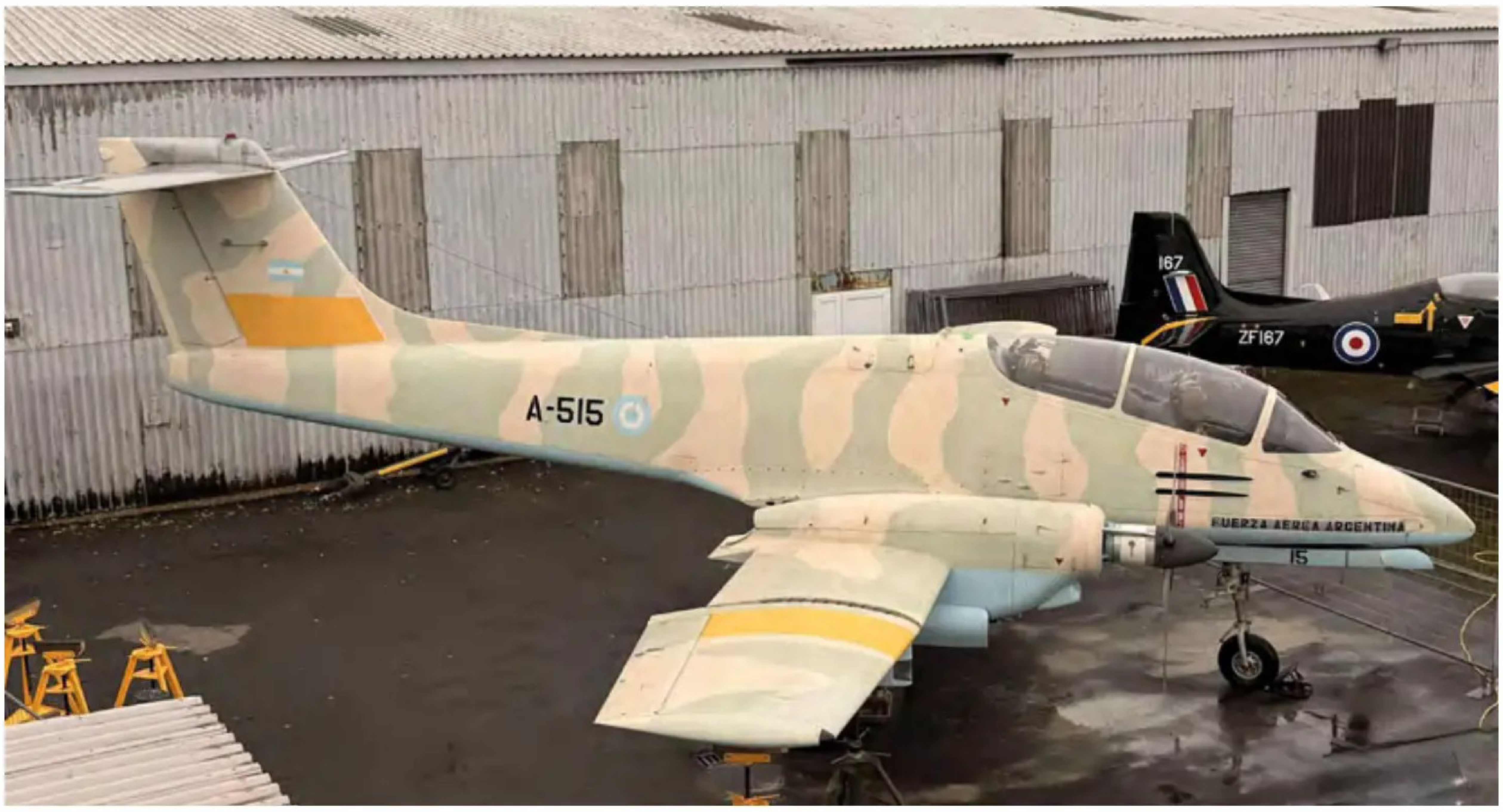
RAFM Pucará to Doncaster

On 25 October the South Yorkshire Aircraft Museum at Doncaster took delivery of ex-Argentine Air Force FMA IA-58 Pucará A-515 to join its Falklands War display '11 Weeks in 1982', the UK's largest permanent exhibition dedicated to the conflict. The Pucará was previously part of the RAF Museum collection at Cosford.

During the 2 April-14 June 1982 conflict, A-515 took part in several missions from Port Stanley airfield against British forces, including the final Pucará mission on 10 June. During this sortie, the aircraft was lightly damaged by small arms fire and would not fly again before the Argentine surrender on 14 June.

Captured by British forces on 14 June, A-515 was transported to the Aircraft and Armament Experimental Establishment at Boscombe Down for trials and evaluation purposes. Following extensive work to ensure its airworthiness, A-515 was allocated the serial ZD485 and flown for approximately 25 hours in the UK, the only captured Pucará to take to the air in Britain. After completion of the programme, A-515 was flown to what was then the RAF Aerospace Museum at Cosford on 9 September 1983.

Pucará A-515 is now displayed at Doncaster alongside a number of other aircraft from both sides of the Falklands conflict, and a memorial dedicated to the 255 British servicemen and three islanders who were killed. It is currently being kept outdoors pending future museum developments, after which it will be moved under cover.



Pucará A-515 after arrival at Doncaster on 25 October. The fuselage of an Argentine Air Force Falklands conflict veteran Aermacchi MB339A is also part of the South Yorkshire Aircraft Museum collection. SYAM

Quax acquires rare Do 28

Dornier Do 28 A-1 N123CA, a regular display item at Old Warden over the past few years, arrived at the Quax-Flieger hangar in Paderborn, Germany in a curtain-sided artic in early October. The machine had been damaged on the way back to Old Warden from mid-September's Hahnweide show in southern Germany during a stop-over in Kent. The former British owner is a friend of the Quax-Flieger group and the club had shown interest in the aircraft — the only example operating in Europe — in the past, so an agreement was quickly reached. Many spare parts are also being shipped to Paderborn to assist with the upcoming work and future flight operations.

With the support of the club's own Technik GmbH subsidiary, Quax members will begin repairing the twin-engine light transport this winter. No timeframe has yet been given for when this rare early Do 28 — not to be confused with the larger Do 28 D Skyservant — will return to the air. However, Quax has already reserved the registration D-IQXN for the aeroplane.

Built during 1964, the Dornier complements the Quax fleet of historic German aircraft. Another example of this 'twin-engine Do 27' is on display in the Dornier Museum in Friedrichshafen. Only two other examples of the type, N841RS and N12828, are still airworthy worldwide: both were on display at the Experimental Aircraft Association's AirVenture show at Oshkosh, Wisconsin in July 2024.

ABOVE: Arriving at the Quax hangar in Paderborn, Dornier Do 28 A-1 N123CA had been a welcome participant at Old Warden displays over recent years and will be much missed. QUAX-FLIEGER

AHUK awards presented in Derby

Richard Woods, who couldn't make it to Derby on 25 October, being presented with his AHUK Individual of the Year Award by Gary Hancock of the Yorkshire Air Museum at Elvington on 26 October. GRAHAM BUCKLE

At the Rolls-Royce Learning and Development Centre in Derby on 25 October, the teams behind an innovative restoration, an exemplary replica project and a challenging rescue operation were bestowed with trophies at the 2025 Aviation Heritage UK awards ceremony.

The Robert Pleming Memorial Trophy for Innovation went to the Medway Aircraft Preservation Society for the restoration of its Short S16 Scion 2 floatplane G-AEZF and its hugely popular period in Rochester Cathedral during August 2025. The restoration, which was led by MAPS' Robin Heaps, was notable for its innovative use of modern techniques in re-creating the many missing and damaged parts of the aircraft, especially in the absence of any Shorts works drawings. The outstanding innovation in this project was, however, the display of the aircraft in Rochester Cathedral, in an exhibition organised by the Rochester Bridge Trust featuring educational activities, extensive displays and even a flight simulator. Over a month-long opening, it attracted an astonishing 59,000 visitors to the cathedral.

The AHUK Group of the Year Award was won by the Aircraft Preservation Society of Scotland for its construction and flying of a replica First World War Sopwith 1½ Strutter. It was built using original works drawings by the all-volunteer APSS group, based in North Berwick, and first flew in September 2024. It bears the markings of F2211, which was repeatedly piloted onto and off HMS *Argus*, the Royal Navy's first 'flat-top' aircraft carrier, by Richard Bell Davies VC DSO in the Firth of Forth during 1918. APSS, which has a strong focus on education, has also created a Spitfire cockpit simulator.

AHUK's Individual of the Year is Richard Woods, who has led the dismantling of Shackleton MR2 WR963 and its move from its previous home at Coventry to the Yorkshire Air Museum at Elvington, where it is being re-erected by Richard and a team of skilled volunteers. This was conducted against a demandingly tight deadline, with the final dismantling and transportation taking place in the depths of the winter of 2024-25 — with the extra pressure that all the dismantling had to be fully reversible to enable the Shackleton to be returned to running condition.

NEWS IN BRIEF

PIMA 'JAG' COMPLETED

SEPECAT Jaguar T4 XX150 went on show at the Pima Air and Space Museum in Arizona in mid-October following a four-year restoration. Delivered to No 226 Operational Conversion Unit at RAF Lossiemouth during September 1974, it made its final flight on 9 January 2006 and ended up being sold to Honeywell in Phoenix, Arizona where it was used on a project to re-engine Indian Air Force Jaguars. On 14 October 2021, it was moved to Pima. It has been restored in the markings it wore while with No 41 Squadron at Coltishall.

SQN LDR PAUL DAY OBE AFC

Former Battle of Britain Memorial Flight commanding officer Paul Day, who flew fighters with the flight for an unprecedented 24 years and was in command from 1996-2003, passed away during September. Day, who joined the RAF in 1961, was known as 'the Major' following an exchange tour with the US Air Force flying F-4 Phantoms, where his RAF rank was alien to American personnel, leading to the substitution of the equivalent USAF nomenclature.

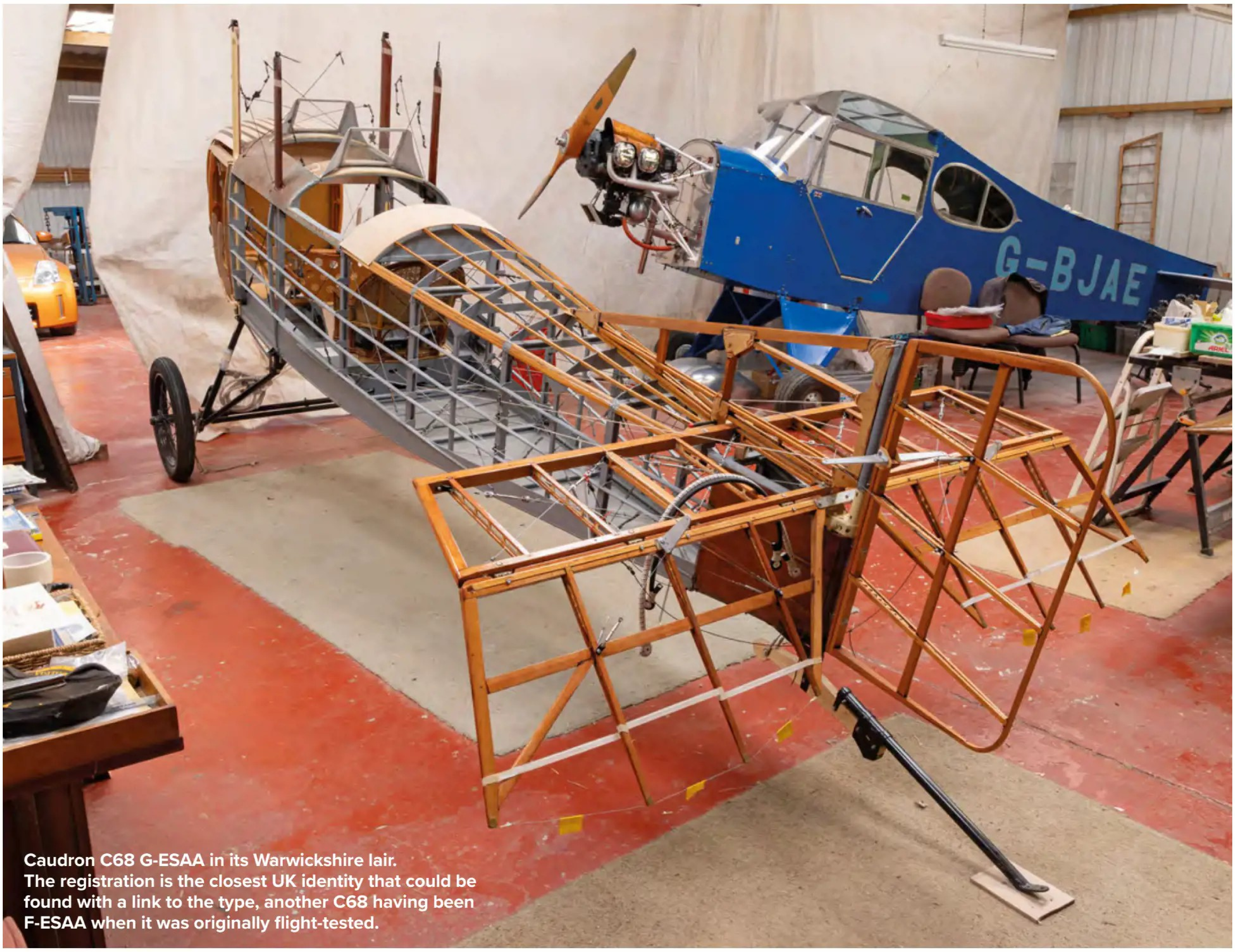
TALL-IN-THE-SADDLE TO DUXFORD

North Weald-based Peter Teichman has sold P-51D Mustang 44-72038/G-SIJJ *Tall-in-the-Saddle* to Robert Tyrrell, who will now have the fighter operated by the Aircraft Restoration Company at Duxford.

MISSION IMPOSSIBLE AT HAA

Highlights of the Historic Aircraft Association's annual symposium, held at the RAF Museum London on 11 October, included a gripping presentation by John Romain about flying beefed-up Boeing Stearman PT-17s on location in South Africa for the Tom Cruise film *Mission Impossible — The Final Reckoning*, and a talk by Tom Smith about his family's Fairey Swordfish II HS554, which is being restored to fly at White Waltham.

The Darroll Stinton Trophy, presented by the HAA for an individual who has made a personal contribution of major significance to the benefit of historic aviation in the UK, was awarded to the Shuttleworth Collection chief engineer Jean Michel-Munn (pictured).

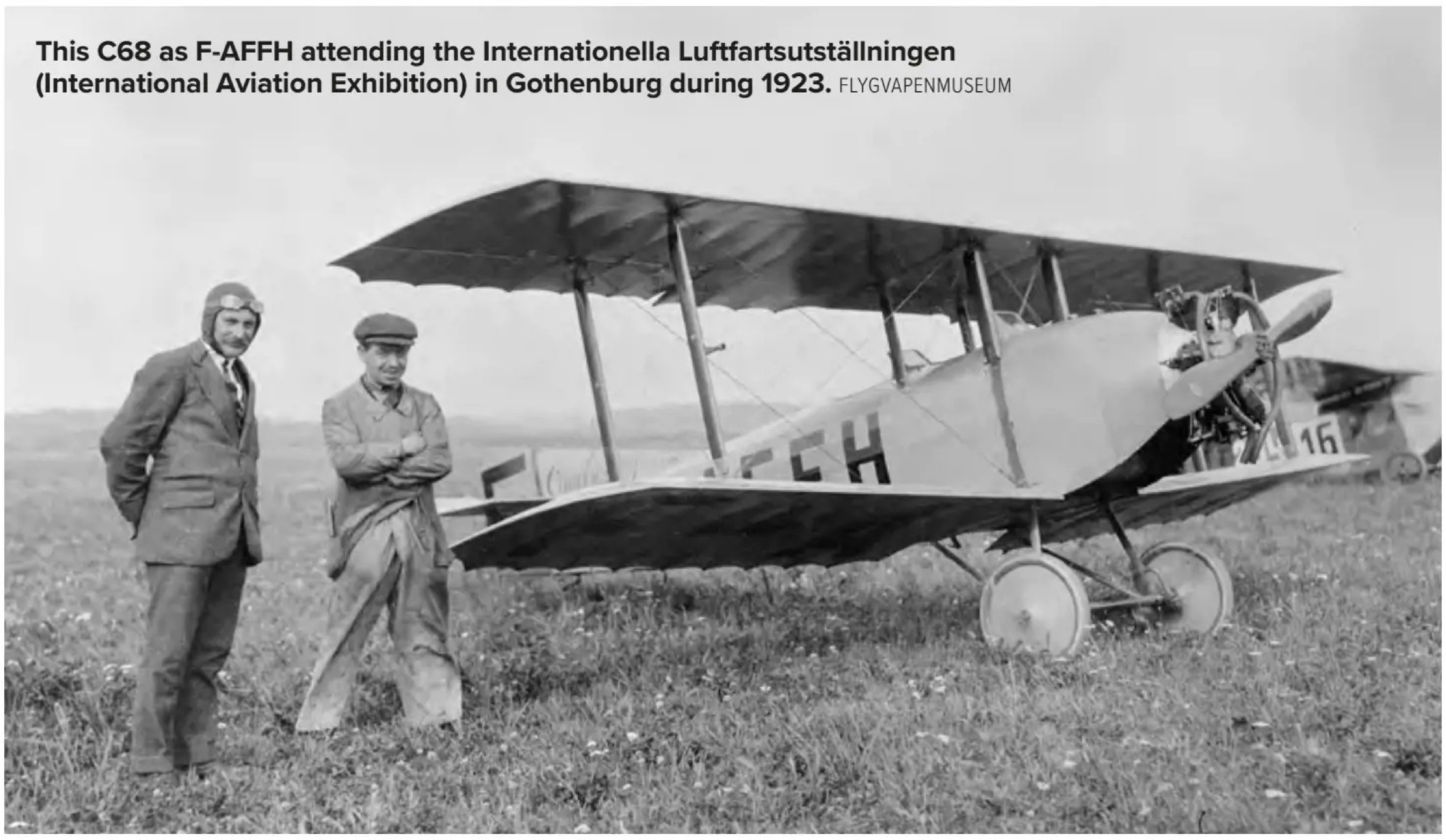


Caudron C68 G-ESAA in its Warwickshire lair. The registration is the closest UK identity that could be found with a link to the type, another C68 having been F-ESAA when it was originally flight-tested.

THE FRENCH CONNECTION

At a rural location in Warwickshire, a classically Gallic light aeroplane is taking shape again — a Caudron C68, now more than 100 years old, being tackled by a cross-Channel team

WORDS: BEN DUNNELL **PHOTOGRAPHY:** DARREN HARBAR



This C68 as F-AFFH attending the Internationella Luftfartsutställningen (International Aviation Exhibition) in Gothenburg during 1923. FLYGVAPENMUSEUM

"We started off with a plan — we gave up. It's become a case of doing a bit, and when that's done moving on to the next bit. It's the only way we've found to do things". Well-known restorer and pilot David Beale is recounting a tale which will be familiar to many who have embarked on a vintage aircraft project. But when the subject is a sole survivor from a small production run, original drawings are at a premium and the most valuable surviving information is located in a different country, the challenge is multiplied.

We're talking in a workshop at a private airstrip in Warwickshire, where the only remaining Caudron C68 is coming together. The first example of this delightful French touring biplane took to the air in 1922, when its wing-folding set-up was a definite innovation. None has flown since the 1930s and only this one, now registered G-ESAA but which was F-AFFH for the whole of its flying career, still exists. Certain aspects have rendered its return to airworthiness a particular challenge. Now, significant milestones are in sight.

At the other end of this cross-Channel effort is Peter Gould, without whom it wouldn't be happening at all. A co-founder with Beale of the group that owns the machine, the Association pour la Restauration et l'Exploitation du Caudron 68, he has looked deeply into its background as the historical and technical researcher — and, crucially, French-speaker — on the team. "There were seven airframes altogether", he notes, "but one of those was never to fly. It was used for structural tests. Another one was developed into the prototype of the succeeding model. So, really, there were only five C68s that actually existed, and ours was the last.

"It was originally retained by Caudron and sent almost as soon as it was finished to Sweden, because in the summer of 1923 there was the first international air exhibition and competition that invited all countries in Europe including Germany... It didn't do terribly well because it was placed against military criteria for construction where it lost a lot of points. There are photos of it on the aerodrome in Gothenburg, and it was exhibited in the grand hall there as well as flown."

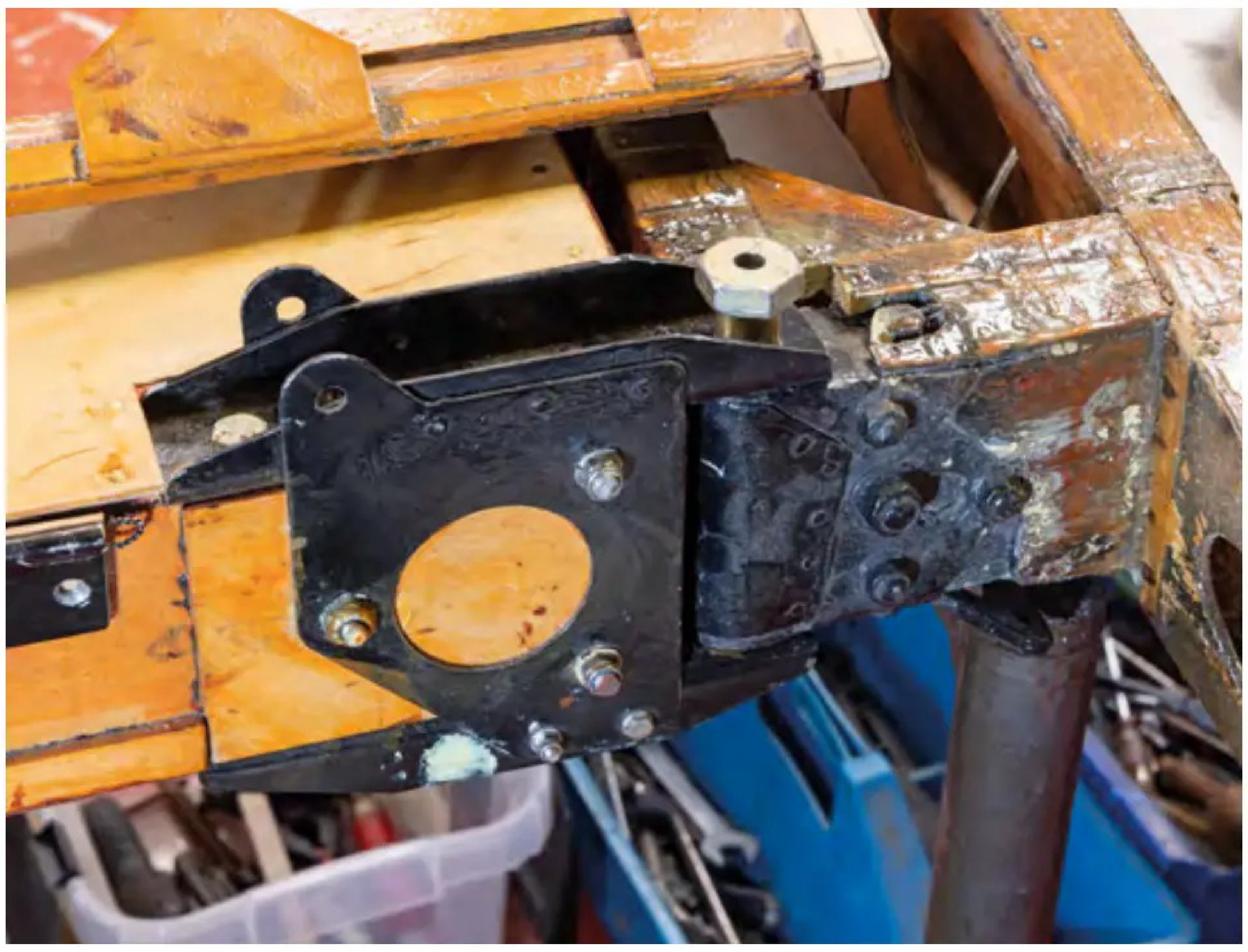
Its next owner, in 1924, was Pierre Scordel, described by Gould as "a most interesting person". This First World War Farman F40 pilot, who flew night missions against Zeppelins, was a businessman and socialite who bought the Caudron as his first private aeroplane and based it at Chaumont. "He used it for a few business trips, if you stretch the term a bit, but essentially for leisure, and exhibited it at important air displays as well as giving a lot of initiation flights. While he owned the aircraft he claimed to have done 100 such flights.

"He owned it until 1929. By then it was pretty obsolete... It went to a club near Le Mans, a little start-up club as many were, because most French aero clubs were founded in 1929-30... They based it in some fields and used to tow it out of its shed with the wings folded and give people initiation flights. That was all it could do, because it wasn't usable as a training aircraft."

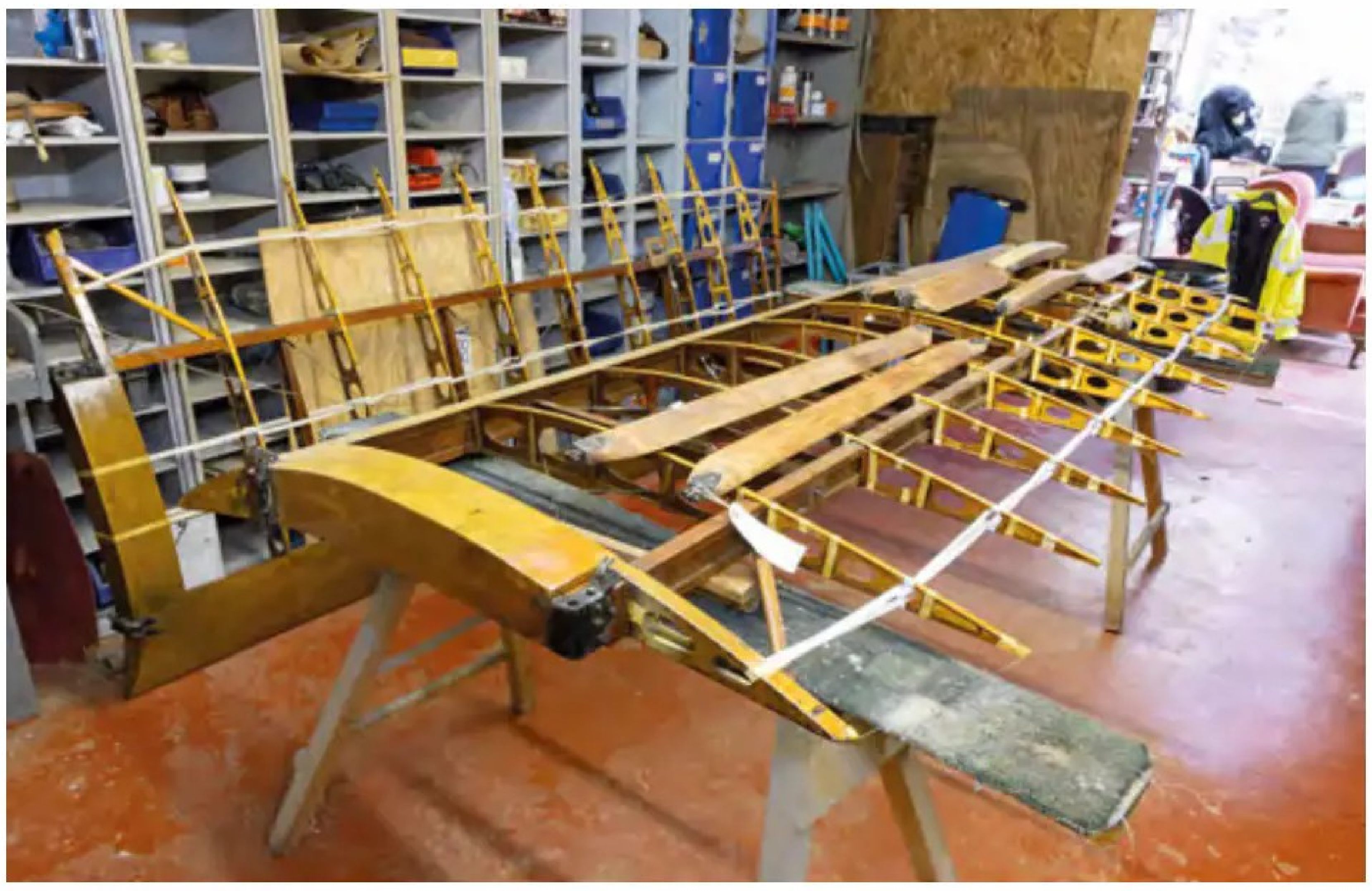
Another recently formed club bought the C68, "and this", says Gould, "is where it started to go downhill because it was even more obsolete — and even more tired, probably. This was a group near Paris, Les Jeunes Ailes; it was actually based at Orly. As far as we can track it down, it was only flown for a few months before they bought another aircraft and retired the C68 to try and convert it with dual controls, which they never succeeded in completing... Finally they sold it to someone else, an enthusiastic amateur like many were in those days. He had a project to turn it into something we'd call an ultralight, but he got distracted by the famous Pou-du-Ciel..." Worse, he was killed in one. "With that died the hope of putting the C68 back in the air."

After the war it ended up in the hands of Gaston Decoop, a noted collector, who stored the airframe at La Ferté-Alais. In photos from 1974, Gould states, "it was obviously suffering, and it suffered a lot more after that... the C68 ended up in the east of France with a man

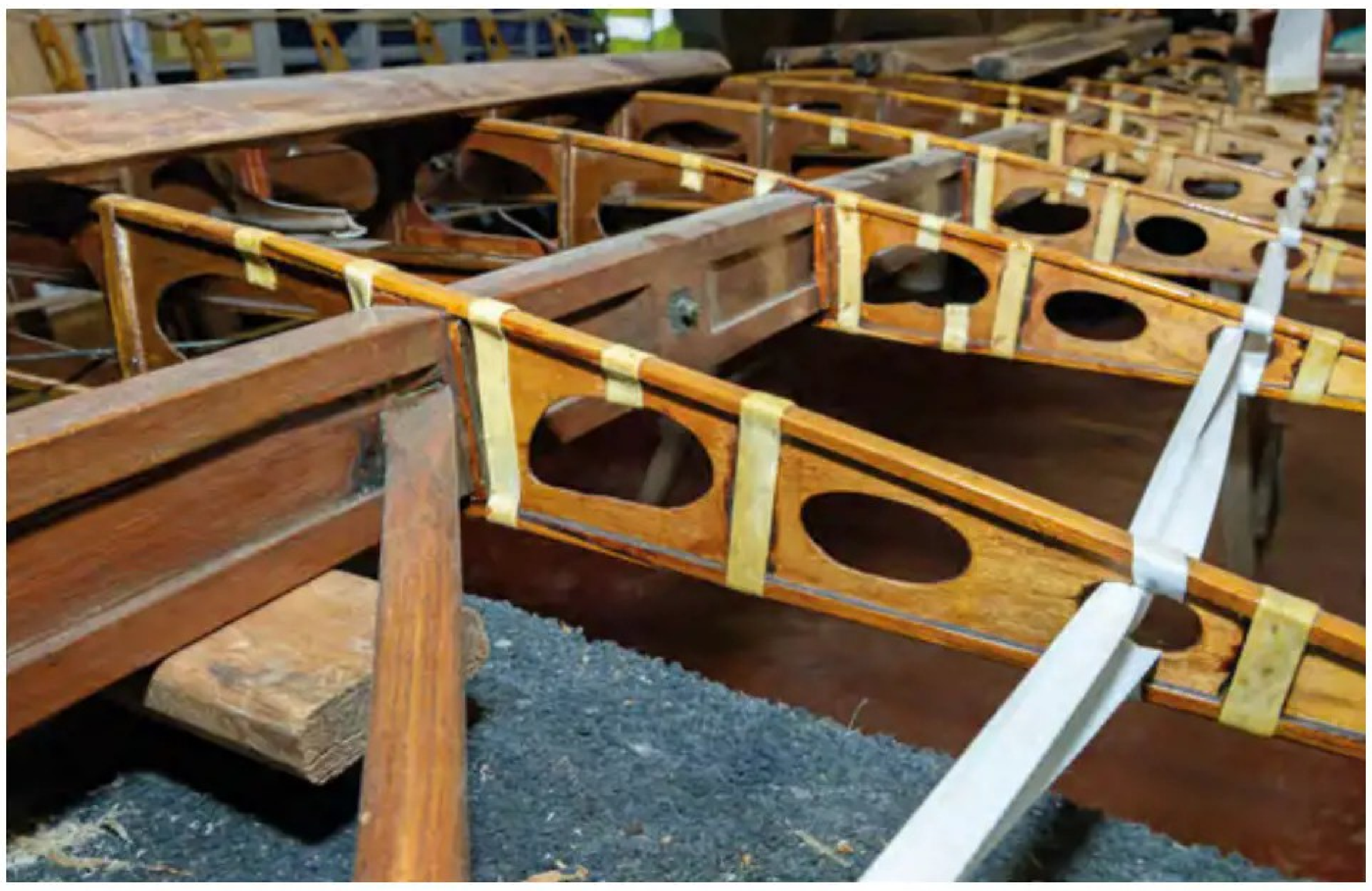
> ***"Ours was the last of five C68s that actually existed"***



An example of how Caudron favoured heavy steel brackets and bolts for construction purposes, clearly not fully trusting the glues of the 1920s.



The wing sections are almost more akin to those of an Edwardian-era aeroplane, with a lot of camber and a sharp leading edge.



Tape being used on the plywood webs within the wings to create the correct effect when fabric is applied.

called Bernard Collard, who was going to make it into a ULM [ultra léger motorisé, the French term for powered ultralight]. He did quite a lot of work using what was left, and it wasn't a restoration… very far from it, in fact. He abandoned it when he realised he had bitten off more than he could chew, and sold it to a collector in Lorraine who had quite a decent collection of old aircraft and saw it as a future project for himself. But time passed, other future projects got done and that one didn't. As I happened to know this chap rather well we agreed a sale, so it transferred to the AREC68 Group in 2019."

This was where the challenges began. "There were no files with it", recalls Gould. "All technical records had disappeared… It led to an awful lot of contact with organisations of every kind". If one is to be singled out it must be the Musée des Frères Caudron in Rue, in the Somme region, location of the original factory. Finding more technical information there than had been expected, a deal was agreed between AREC68 and the town of Rue whereby, in return for full access to those archives, it would digitise the entire collection. So large a task was this that a separate association, Antique Aéro Doc, was spun off to handle it.

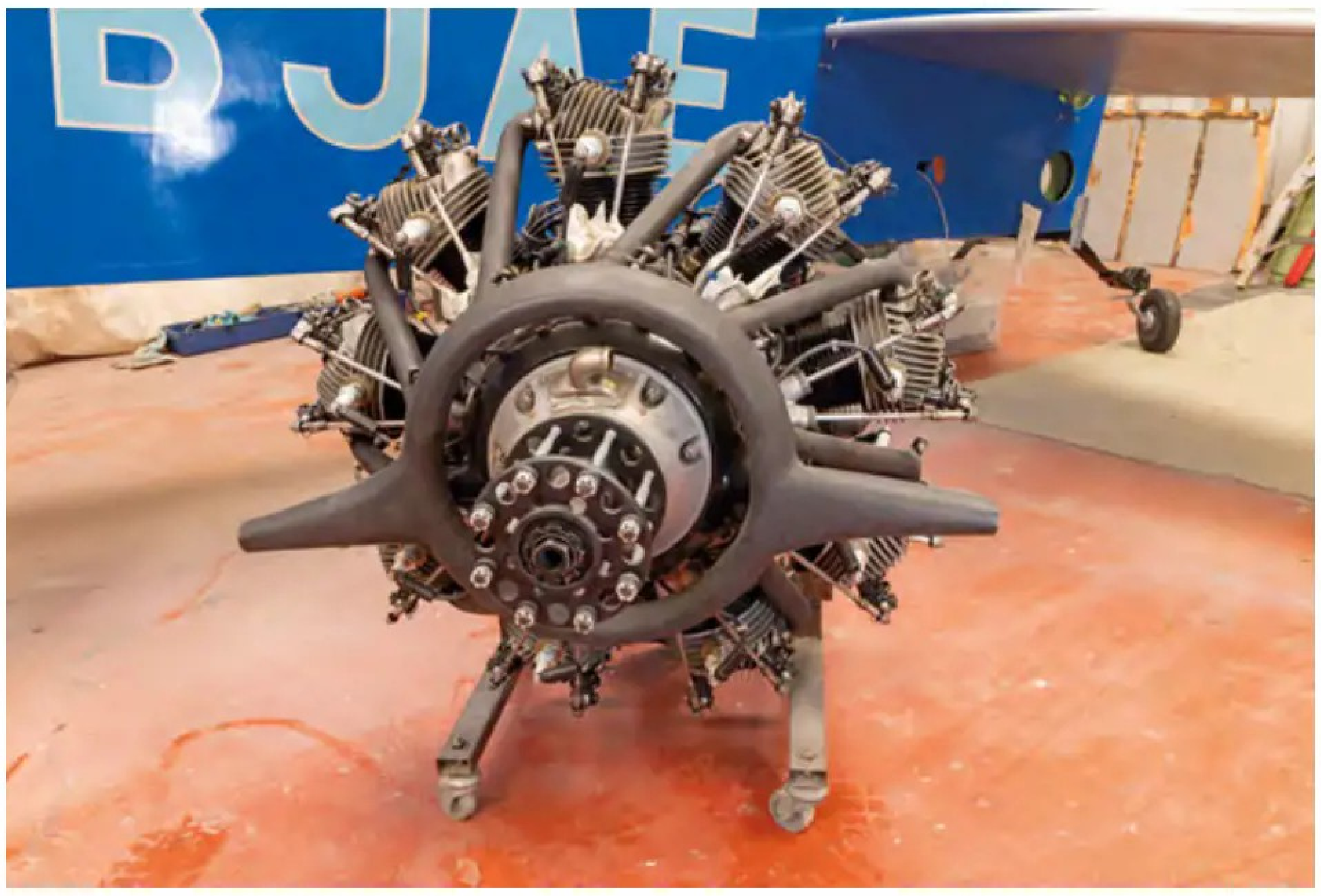
◆

The result was provision of many original Caudron photographs, a lot of which, says Beale, "lay out a tailplane and all the pieces with a ruler, so from that we can scale things and work everything else out". Even if they don't specifically show a C68, as Gould explains, they offer evidence of "the way the Caudron design team worked and the 'house style' of each individual fitting. Often we've got pictures of fittings and details which were sometimes transferred from one aircraft to another and were therefore incorporated on the C68, or where the 'house style' was so recognisable that we've been able to 'house-style' in the same vein."

This was crucial given the last attempt to turn the aeroplane into an ultralight. Beale describes it as "a complete bodge-job" to the point of being unsafe. On the curved wooden sections at the front, instead of bending it properly to shape, curved pieces were cut from a block of wood, meaning the grain was running out with significant negative implications for structural strength. It didn't have a proper engine mount, rather relying on an ordinary steel frame mount with a very low standard of welding. No wonder he adds, "We needed to get all the front end done early on. Everything forward of the front struts is new."

So are the centre-section and tailplane. "We've got a photograph of it in the '60s with the centre-section and the original engine", Beale continues. "We don't know what happened to the engine and we don't know why he rebuilt that centre-section or the front end of the fuselage, so we've just had to re-engineer and research everything to find out the dimensions. Luckily the Caudron brothers didn't change anything if they didn't need to…

"The wings are basically all original apart from the trailing edges, because a guy who had it for some time, we think, in the '30s had put solid lead trailing edges on. They all had to be taken off and new wood put



The 45hp Salmson 9AD radial engine has been fully overhauled.

Very experienced restorer David Phillips shows one of the hollow half-struts.

Francis Donaldson of the LAA tries the C68's rear cockpit for size, while David Beale looks on. KEY/BEN DUNNELL

back in to put them back to size. I made the press tool for the wire guides."

All the while, those construction peculiarities arise. "The phrase, 'Oh, it's Caudron' comes up all the time. 'Why would you do it this way?' 'Oh, it's Caudron'. Nothing is glued together; everything is wire-braced and bolted. Why would you bolt everything together with so many little steel brackets and bits and pieces, which weigh a lot, when you could just glue it? Up until the '20s they didn't really have very good glues, so that's why they decided to use bolts and it's all wire-braced, but Caudron carried on with that right up until the early 1930s. The only thing they did change to later on was that they went over to aluminium [Peter Gould adds, "L2R dural replaced mild steel on the fittings in the mid-1920s"]. Interestingly, the aluminium specification for those fittings is stronger than the steel they used."

Taking a break from tackling the wings, David Phillips, another AREC68 member, says, "Where the cap strips went onto the plywood webs, on every station they would put a tape. To emulate that, even though we don't actually need to do it, I have taped the webs, so when the fabric is run over them it will have these little indentations. They will probably be seen by very few people, but it will give an emulation of how it was when it first flew."

The fact that the C68 has folding wings is interesting, since this configuration pre-dated de Havilland's DH60 by three years. An interesting strut arrangement helps facilitate this: half-struts, of which the inner half stays on the fuselage and the outer half moves with the wing. And all the interplane struts, not just the split ones, are hollow. "Until we cleaned the old varnish off", says Phillips, "we didn't realise. We could see the grain on one side is completely different to the grain on the other side, which means they've been made out of two pieces of timber. That was quite common in Edwardian times."

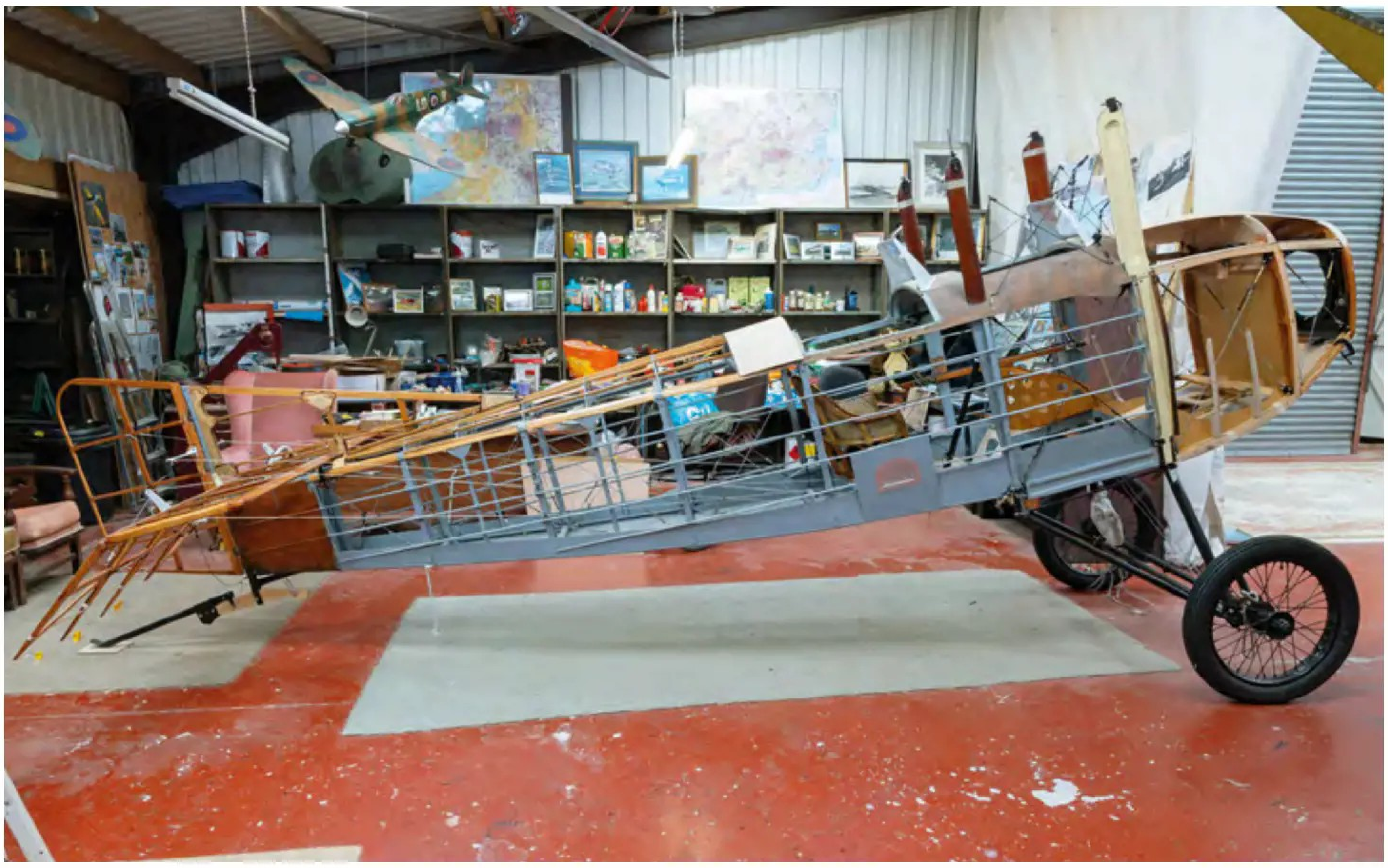
The wing section with substantial camber contributes to the C68's leisurely performance. Nor was it blessed with much power when originally fitted with a 50hp Anzani radial, "which would", as Beale states, "have been really marginal with two up". The C161 and C168 addressed that, while also having wings of greater span and with a flat bottom. This C68 will use a 45hp Salmson 9AD, less powerful even than the initial Anzani but more reliable. Beale reports, "It's had new bearings and nine brand-new cylinders we found in a box which came with the project."

Some fittings have proved hard to find. According to Beale, "Turnbuckles have been the biggest problem, where they've been missing — getting the really lightweight, little turnbuckles for things like all the stays. Luckily we've found a load now, so we're OK. Most of the other items we've just had to make. Where we have made something and it's not exactly a Caudron drawing, I've done a new drawing and referenced it."

The project came with an undercarriage that was far too heavy and incorrectly designed. However, the wheel hubs have been reused and a firm near Birmingham has put new rims and spokes on. The seats — which are different in the front and back cockpits — comprise one original and one new, the former having been found on eBay with an owner in Somerset who thought it was from an Edwardian aircraft.

"We're hoping", says Beale, "that come spring we can fully rig it, just to check all the control runs and everything else. Then there's no reason why we can't cover it. It's going to be fun and games getting the scalloped trailing edge right!" For the covering, Ceconite will be employed. "The reason we use modern fabrics is because old fabrics destroy the airframe... When you have cotton or Irish linen, it sticks to the wood, and when you peel it off, if you're not careful it will rip the wood. Ceconite and other modern fabrics don't. You just put a bit of MEK [methyl ethyl ketone] on it and it peels off and leaves it alone."

French light aeroplanes of the inter-war years deserve to be far better-known outside the 'hexagone' than is the case. As for this one, David Beale says, "It's almost certain it will go back to France at some point". But when the C68 flies in the UK, as the first Caudron product to take to British skies for many years, there will be an opportunity properly to appreciate this charming, and extremely rare, biplane — as well as the exceptional quality of its restoration.



There is very little knowledge of the C68 — or, indeed, Caudron aircraft in general — in Britain.

STEVE SLATER

HangarTalk

A vintage light aircraft aficionado's view on historic aviation

The world of light aviation in the UK suffered a sad loss in October with the passing of David Faulkner-Bryant, a former Popular Flying Association volunteer who went on to become its chairman, as well as being the founder of the association's famous 'strut' system. David identified a need for homebuilders to share their knowledge and past experience of building, maintaining and flying homebuilt and vintage aircraft, as well as thinking of it as a social platform, which carries on today.

The late David Faulkner-Bryant with his beloved Currie Wot. VIA STEVE SLATER

The first face-to-face meeting co-ordinated by Faulkner-Bryant was on 4 July 1969 at the King and Queen pub in Brighton. The association subsequently changed its name to the Light Aircraft Association in 2007, but it still represents a very active community of homebuilders and recreational flyers and continues to run the Southern Strut, now based at the Swiss Cottage pub at Shoreham. It is currently one of no fewer than 26 regional groups, joined by affiliated type owners' clubs and special interest groups that can take advantage of LAA event insurance and similar benefits.

Faulkner-Bryant worked in the building industry but, he once recalled, "the journey began when I was co-opted onto the PFA committee to act as a link between members on the south coast and the committee. I decided to contact all the known members on my patch. It was hugely successful, and many other regions followed suit in fairly quick order."

All the LAA's struts owe their development to David and his successors' initiatives. One of the most recent additions is the First Continental Strut, formed in 2016 and meeting monthly in the art-deco terminal building at Antwerp's Deurne airport, similar architecturally to the PFA's original base at Shoreham.

David retired from the association some years ago, but forged a new career. He bought a farm on the Isle of Skye and a herd of White Highland cattle. There he realised the island needed a local wine merchant, which developed to supply the local restaurants and hotels.

> *"Faulkner-Bryant and Lord found they'd landed at a Mirage IV base"*

As a builder of aircraft himself, he flew a Currie Wot biplane for many years. He famously camped out in the CAA's London office until his preferred registration, G-BDFB, became available. No 'personalised plates' then! He regularly 'took off' in the diminutive biplane with fellow Wot owner Don Lord, flying together to France, Belgium, the Netherlands and Germany, without sat-nav, or a radio for that matter.

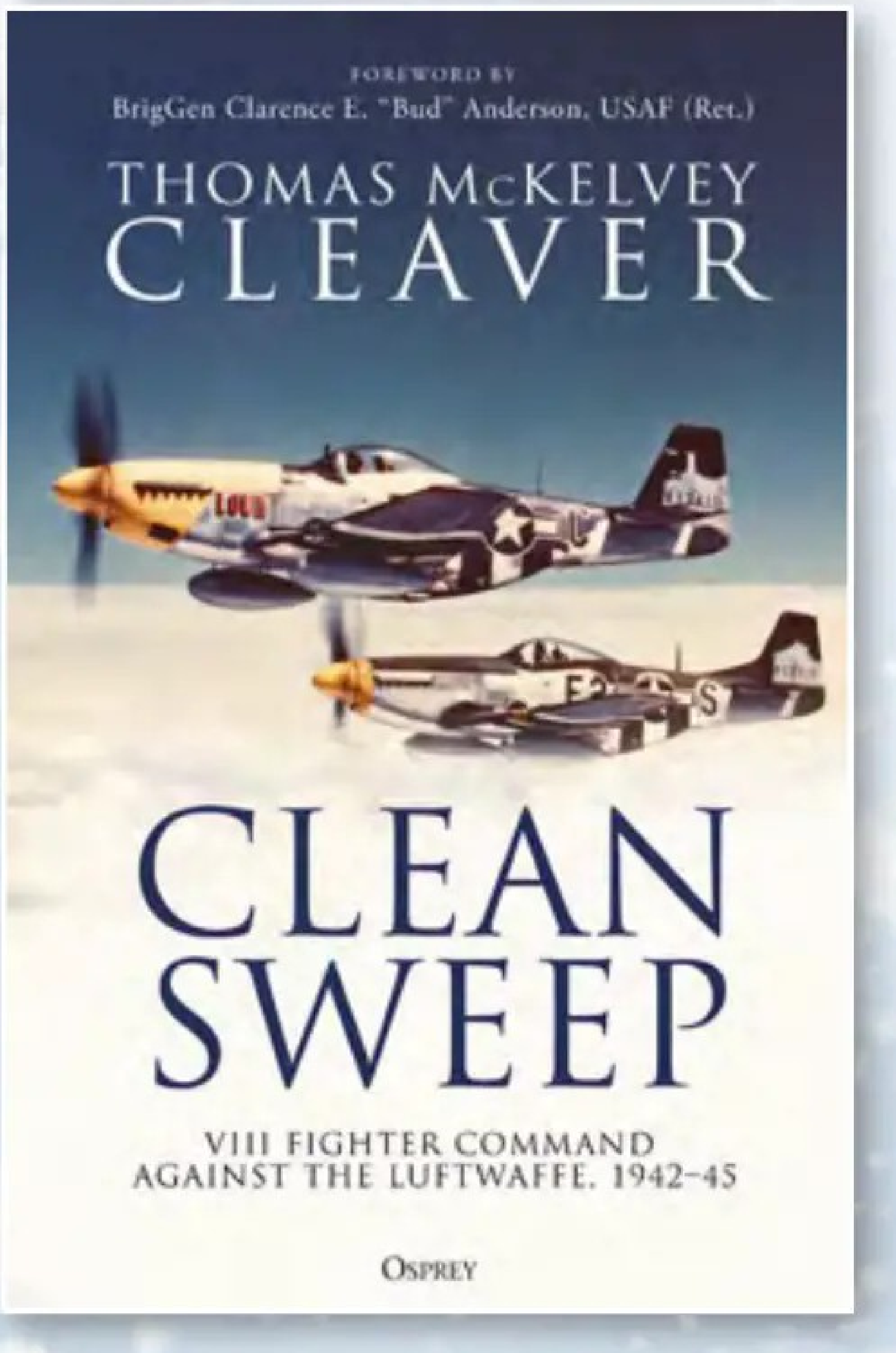
Once the duo got weathered-in as they crossed central France. Out of the mist loomed a huge runway, on which they promptly landed. The airfield was deserted — it was Friday afternoon, after all — so they taxied to a hardened aircraft shelter, only to discover they had landed at a Mirage IV nuclear bomber base. After a sleepless night in one of the shelters, they scarpered early the next morning.

On a different subject, following up on my October column, congratulations to husband-and-wife team Ben and Sophie Polwin who won the prestigious 'triple crown' of British air racing: the Schneider Trophy at Enniskillen and both the King's Cup and the 2025 British Air Racing Championship title at Wellesbourne. The duo claimed the finale in their Vans RV-7 by just a second from the CAP 10 of Dave Moorman.

The good news for aspiring 2026 competitors is that former Typhoon pilot Polwin is stepping down from racing for a few years, as he's become operations officer for the BBMF and will fly its Hurricanes and Spitfires. He's apparently contemplating a new, faster aircraft, but meanwhile others might have a chance.

THE DESTINATION FOR MILITARY HISTORY

COMBAT AIRCRAFT
158
Peter E Davies
B-52 STRATOFORTRESS UNITS IN COMBAT 1992–2025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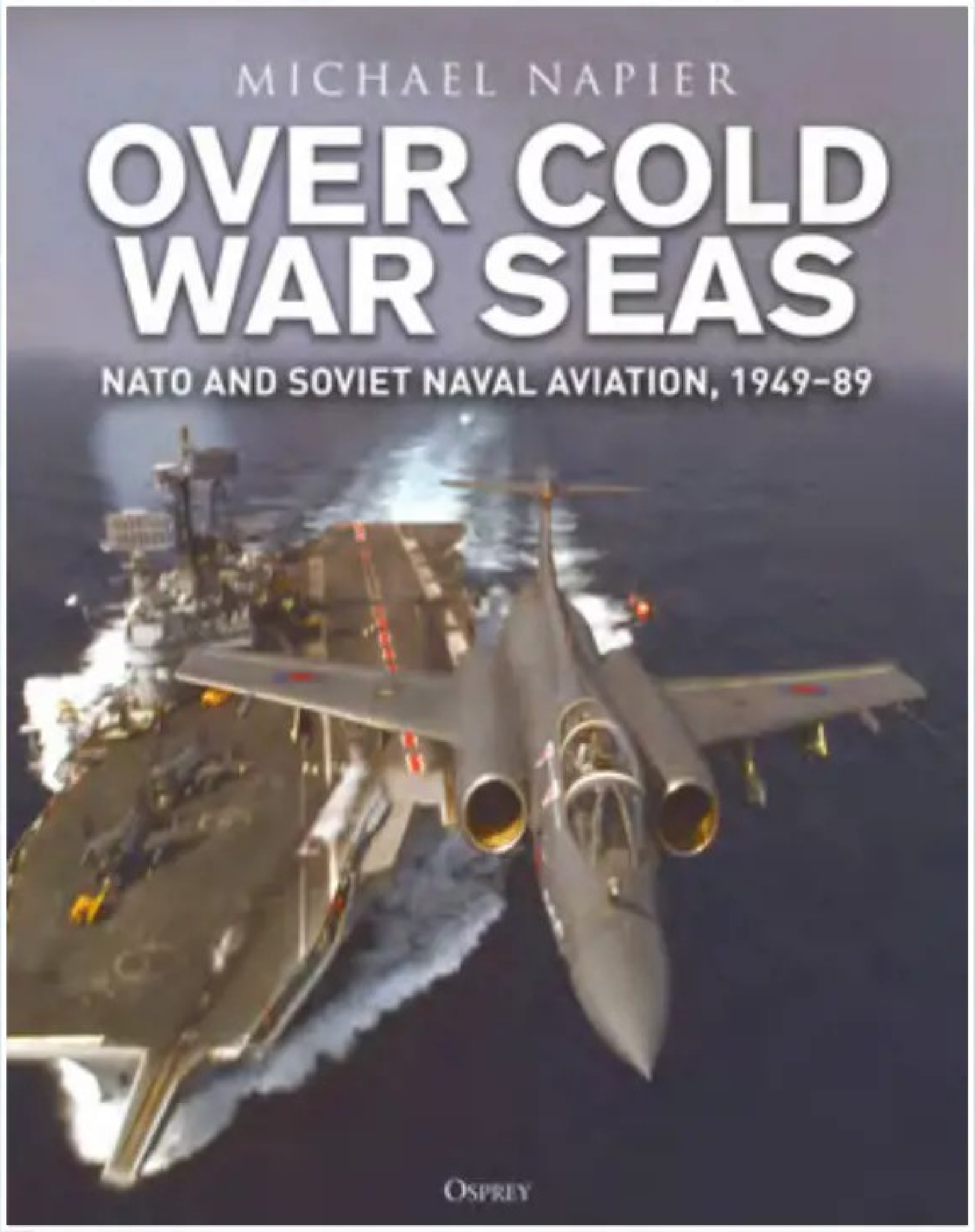
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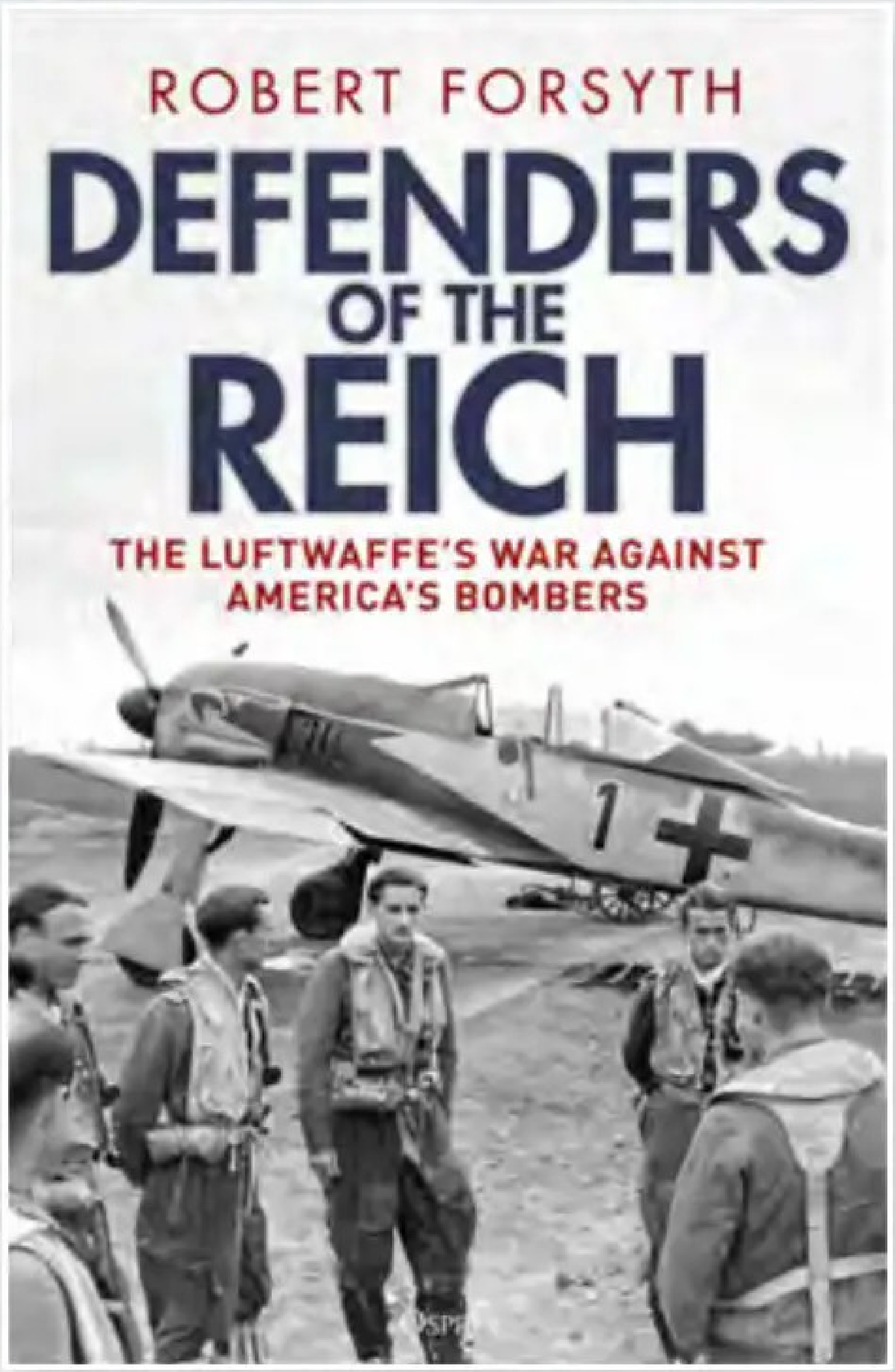
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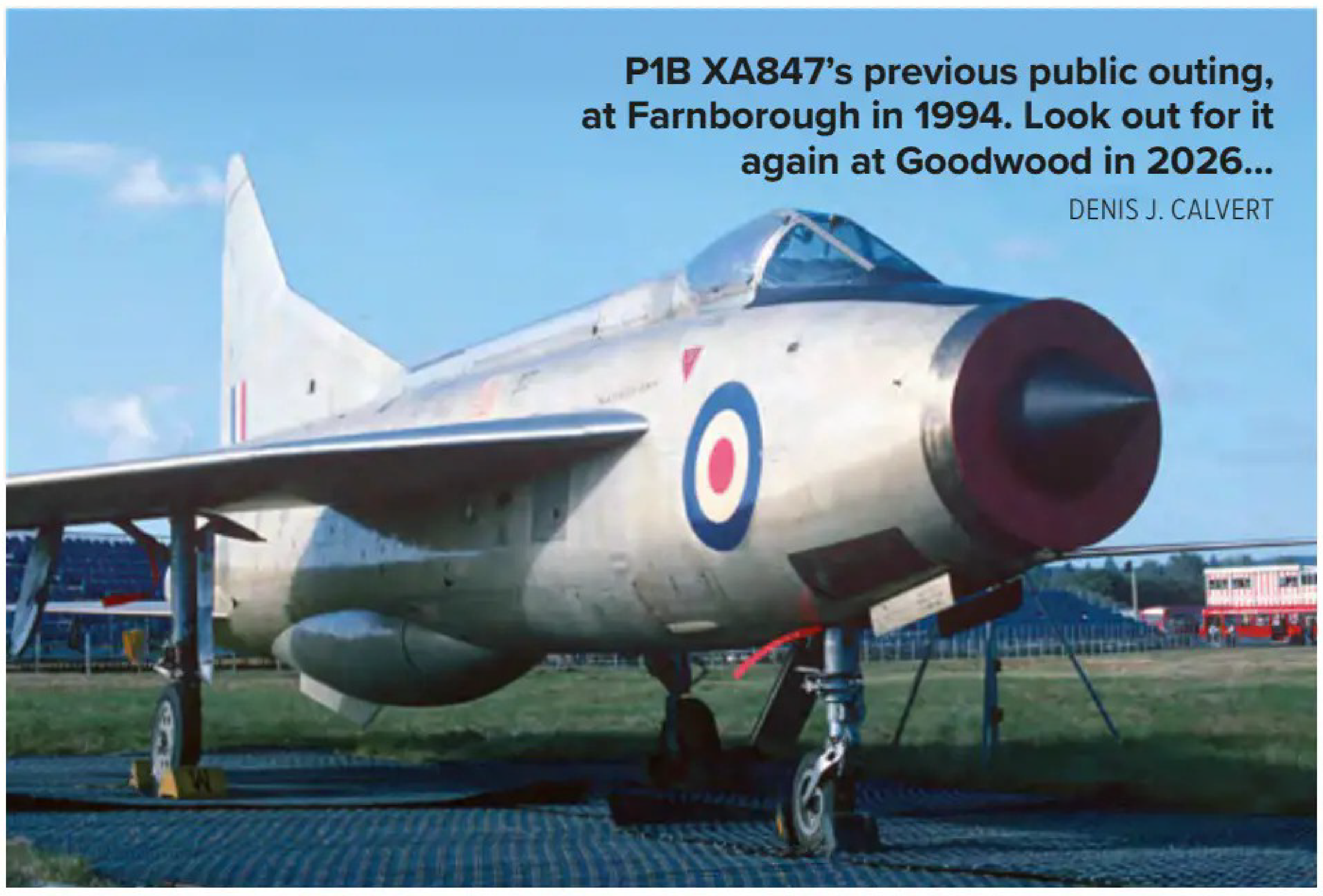
DENIS J. CALVERT

FlightLine

Recollections and reflections — a seasoned reporter's take on aviation history

English Electric P1B XA847, which made its first flight on 4 April 1957, must qualify as a survivor. Although only achieving 205 flying hours in its nine-year career, it contributed much to the development of the Lightning which was — and will probably remain — the only all-British production supersonic aircraft. It was used on test and development duties until it took to the air for the final time in 1966, after which it found various employment until disappearing from public view and going into retirement for nearly 30 years. Now it is scheduled to burst back onto the aviation stage in 2026.



P1B XA847's previous public outing, at Farnborough in 1994. Look out for it again at Goodwood in 2026... DENIS J. CALVERT

To return to the beginning, XA847 was the first of three P1B prototypes. Conceptually, these aircraft were the link between the 'proof-of-concept' P1A, which had the same general layout — highly swept wing, low tailplane, two engines stacked one above the other — and the 20 development batch P1Bs which preceded the production Lightning F1. XA847 was the first British fighter to reach Mach 2, which it did in the hands of 'Bee' Beamont on 25 November 1957. The name Lightning was officially conferred at Farnborough on 23 October 1958, when Marshal of the Royal Air Force Sir Dermot Boyle cracked a bottle of champagne across XA847's nose. Its forward fuselage was adorned with a newly painted light blue 'lightning flash' with its name in dark blue script. Sadly, no colour photos seem to have been taken on the day.

XA847 arrived at Boscombe Down for an initial assessment in December 1957, and returned for in-flight refuelling trials during 1960. For these, a camera fairing was fitted to the port side of the fuselage, below the cockpit. Other tests involved the carriage of Red Top AAMs and the fitting of an enlarged ventral tank in the style of that later introduced on the F6. To improve longitudinal stability, particularly with the new tank, the leading edge of the fin was extended by a large fillet. This unsightly one-off modification was only ever fitted to XA847; the Stage 3 'square-topped' fin introduced later on the F3 would provide a permanent and more elegant solution.

> *“Ian Black is restoring XA847 for unveiling at the Goodwood Revival”*

Having flown at the SBAC shows in 1957 and 1958, XA847 went back to Farnborough in 1966 to take part in trials involving the use of a gravel bed to provide emergency stopping of an aircraft beyond the end of a runway. Retired from service, it passed via Henlow to the RAF Museum at Hendon, where it was displayed until 1988 and replacement by a more representative Lightning F6. It then changed hands more than once and was exhibited at the SBAC show in 1994 in a decidedly non-flying state. During 1998 it was purchased by farmer Giles Howell, who transported it to his barn in Suffolk where, properly dismantled into seven main sections, still covered in the coat of protective lacquer it received at Hendon, it remained safely stored until 2025.

With XA847 now looking for a new home, enter Ian Black, ex-RAF Lightning pilot and focal point of all things Lightning, who has set himself the noble task of restoring it to its 'naming ceremony' state prior to a public unveiling at the Goodwood Revival in September 2026. Ian's new book *Lightning: Volume IV* that captures the spirit of the P1B has been published under his Firestreak imprint and is being sold to raise funds for the project. Enthusiasts — including, of course, *Aeroplane* readers — who wish to be part of this effort can also contribute by joining 'Project P1B' and subscribing a monthly fee to support and follow XA847's restoration and future well-being.

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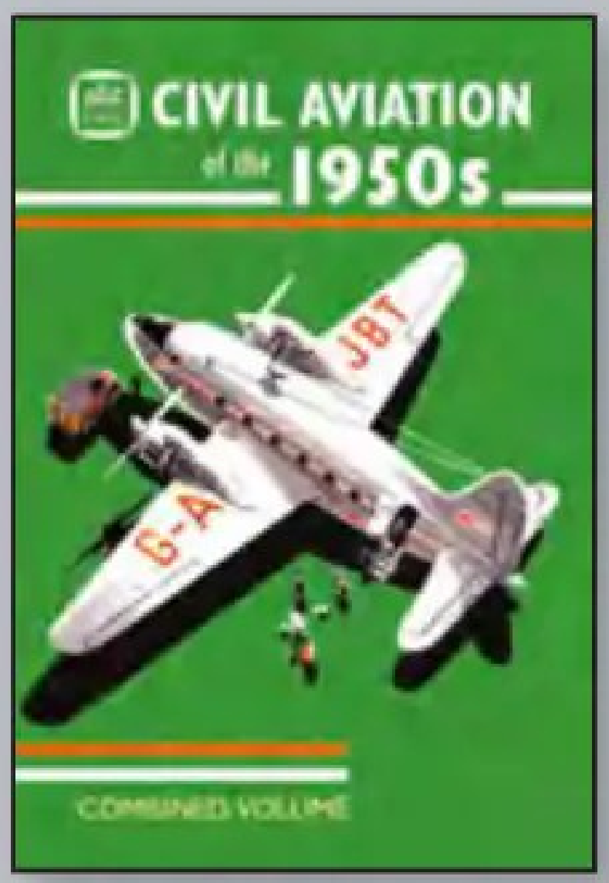

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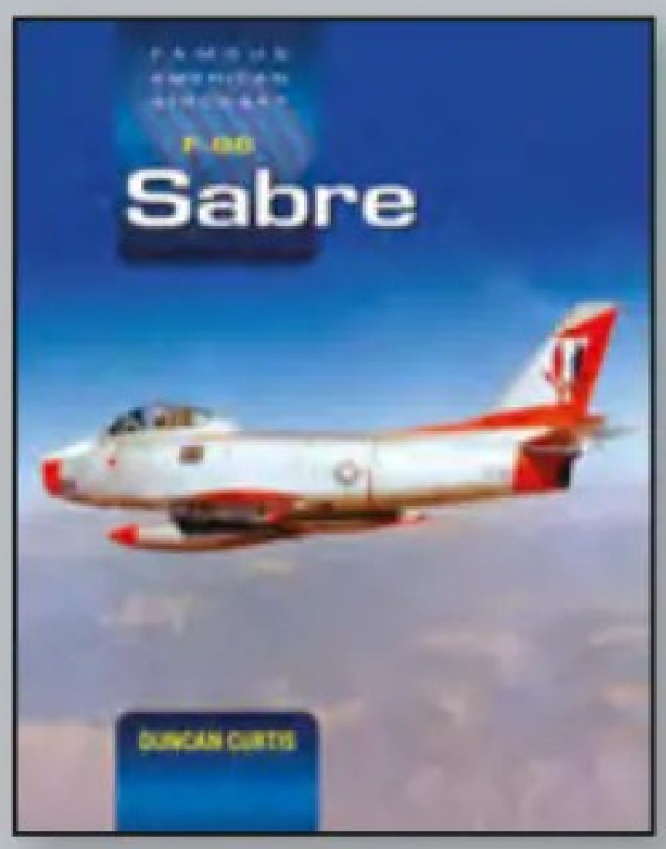

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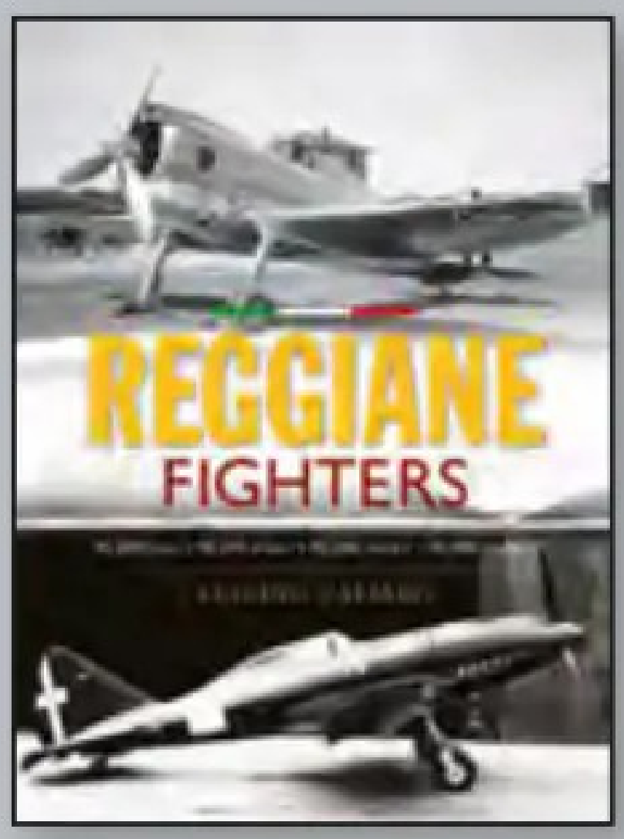

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SEPECAT Jaguar
JAMES JACKSON

RICHARD CROCKETT

From the Cockpit

Join one of Shuttleworth's newest pilots on his vintage flying journey

As quickly as it began, the UK display season has drawn to a close. For Shuttleworth, the final event of the year is the ever-popular Race Day, a celebration of motorsport that brings together an eclectic mix of racing cars, motorcycles and aircraft at Old Warden.

As I've mentioned before, the flying programme typically lands just a few days prior to the event. Depending on the theme, we often have a particular aircraft in mind that, given the chance, we'd love to display. For Race Day, my top pick has always been the Miles Hawk Speed Six. That said, I wasn't holding out much hope of being assigned to it. Then, on the Wednesday before the show, the programme arrived — and I was met with two surprises. First, I'd been scheduled to fly the Po-2 in the mock air race. And second, much to my delight, I was down for the Speed Six, alongside the Comper Swift and Steve Jones's stunning DH71.

The mock race is always a highlight, carefully choreographed by 'Dodge' Bailey to ensure the closest possible finish. This year, in the Po-2 I was to be joined by 'Willy' Hackett in the Blackburn B-2, James Hepnar in the Parnall Elf and Andy Monk in the Southern Martlet. Sensibly, Andy opted not to fly due to the turbulent conditions, leaving us with a three-ship.

Getting the Hawk Speed Six and Swift into the air for Shuttleworth's Race Day was a bonus given the conditions. Read also our review on page 89. BEN DUNNELL

We lined up on the runway for a timed launch and began our six-lap contest. The Po-2 held the lead for a while but was soon overtaken by the B-2 and the Elf. I managed to reclaim second from the Blackburn, leaving just the Elf ahead. Fortunately for me, James miscounted his laps and completed his final circuit on lap five, flying a wide pattern to land. That gave the Po-2 the opportunity to slip ahead, and just seconds later I crossed the finish line in first place. Considering the Po-2 cruises at only around 70kt, it was quite the victory!

In the lead-up to my second slot, it became clear the strong winds weren't easing as we'd hoped. Steve made the sensible decision to scrub the DH71, a real shame, but absolutely the right call given the weather. That left just me in the Speed Six and Scott Butler in the Swift. We launched early to hold behind the crowd, then ran in as a pair to begin our display. Unfortunately, after three passes, Scott also decided the conditions were too rough for the Swift and wisely chose to land. That left me with 10 minutes to fill.

As you may have read in my column on the Speed Six, it's a fast aircraft. While Scott was landing, I climbed to altitude and restarted my display, showcasing the pretty Hawk's greatest strength: speed. My first pass was downwind, and reviewing the trace later showed a ground speed of just over 210mph. With that kind of energy, I was able to fly a dynamic routine that I hope was entertaining for the crowd — from the cockpit, it was certainly a lot of fun.

All too soon, I had to wrap up and land on Old Warden's short uphill runway, just in time to park, shut down, and catch the final display of the Lancaster before it heads into deep maintenance until 2027. And with that, the final display of the year was complete. I'm sad to see 2025 come to an end, but equally excited to see what 2026 has in store.

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In every issue, the writer of our Letter of the Month wins a **£25 book voucher** to spend with leading military and transport publisher Crécy.

LETTER of the MONTH

While I very much enjoyed September's souvenir issue devoted to the Battle of Britain, particularly the Database on UK air defences and the article on the Luftwaffe's aims, I feel more attention could have been given to the importance of the role played by the air defences of the north of England, notwithstanding that most of the action took place over the south-east.

The map of RAF Fighter Command squadrons as at 1 September 1940 has a blank space across the bulk of Yorkshire, south of the No 13 Group boundary, whereas the sector station of Church Fenton, located roughly north-east of Manchester, played a role in the Battle of Britain, as did Leconfield, just north of the Humber estuary. On 1 September there were two Hurricane squadrons in residence at the former: No 73 Squadron, which moved out within the week, to be replaced by 85 and No 306 (Polish) Squadron, which was in the process of forming. Another Polish squadron, 302, was concurrently working up at Leconfield.

Squadrons from both stations were thrown into the battle on 15 August when the Norway-based Luftflotte V attempted a series of raids on the east coast. Although receiving mention by Matthew Willis in his 'Fall of Eagles' article this was yet another example of the Luftwaffe's failure to understand the depth and complexity of Fighter Command's organisation. Reichsmarschall Göring and his intelligence staff had convinced themselves the intensity of the fighting they were encountering over south-eastern England must mean the north was relatively undefended, and Luftflotte V discovered to its heavy cost that this was far from the case when the squadrons from east coast stations such as Drem, Acklington and Leconfield plus Church Fenton joyfully waded into its formations, which were bereft of any proper fighter cover. So heavy were its losses that it was never again employed in the battle, while the RAF squadrons which inflicted them such as Nos 73 and 616 (South Yorkshire) Squadrons gained valuable combat experience which would benefit them when they were moved south into the main arena of the battle.

No 85 Squadron Hurricanes up from Church Fenton on 5 October 1940, led by Sqn Ldr Peter Townsend.
CROWN COPYRIGHT

Therefore, while the north may have been somewhat peripheral to the Battle of Britain, its role should not be underestimated.
Mick Britton

Database author Greg Baughen writes: "Mick is absolutely correct about the squadron locations not being quite right. The squadrons he is referring to have not been ignored, but they have been geographically slightly displaced. The boundary between Nos 13 and 12 Groups should be a tad further south — the original map I used had the Church Fenton sector in No 12 Group. For the squadron locations I used Mason's Battle over Britain, *which had the Church Fenton sector in No 13 Group, which pushed the Nos 12/13 Groups boundary slightly south. Not noticing this messed things up a little, so mea culpa for that! The squadrons Mick is referring to (apart from 302 and 306 which, as Mick points out, were non-operational, and are not in Mason's listing) based at Leconfield and Church Fenton do have their dot on the map, but are positioned slightly too far north. The Nos 12/13 Groups boundary and the squadrons on that boundary should be closer to the Humber estuary.*

"The events in the north-east on 15 August could have found a way into the article. It was a good example of the general point the piece is trying to make. What were so many very capable squadrons doing so far north when the squadrons in the south were so hard-pressed? The answer, of course, is defending Liverpool and Manchester from knock-out blows. The Germans get mocked for not realising how extensive the Fighter Command net was but they must have been completely puzzled by Fighter Command having so many squadrons in the north when the key battle was taking place much further south. The idea of the raid was to try and force Fighter Command squadrons north. As the Luftwaffe discovered to their cost, they were already there."

Reference the August 2025 issue and the Tiger Force, an interesting aside is that many of the planned Lancasters were modified to BI (FE) standard at Belfast by Short Brothers and Harland. Chris Barnes in *Shorts Aircraft since 1900* says, "94 Lancasters were overhauled", and with my research of the record cards in the early 1970s I was able to track 91.

The conversion seems to have taken about three months and, as *Aeroplane* says in the article, comprised Merlin 24s, an enlarged bomb bay, strengthened undercarriage and FN82 rear turret and, I assume, repainting into white. Eighteen Lancasters had arrived at Belfast before the end of July 1945 and the end of the war in the Far East in August. None arrived in August 1945, probably due to the works summer shut-down rather than an instantaneous reaction to peace, but they continued to arrive for conversion until April 1946. Many were straight off the production line and following conversion must have never seen service.

Graham Skillen

As a long-time subscriber to *Aeroplane* I was pleased to read your article, '*Sally B*: The Life and Times' in the June issue.

I've met *Sally B* twice. The first occasion was at Essen-Mülheim in September 1981, an airshow which was unique for its era. *Sally B* was there and it was the first time I saw a B-17 flying in Germany. And what a display — *Sally B* came in so low and fast I could barely take photos with my Canon AE1 with a 70-210mm telephoto lens. And it was noisy, unbelievably noisy! The visitors were completely stunned.

The second time was at Duxford in September 2008, when *Sally B* was sadly missing its number one engine and wasn't flying. We visited Duxford and the Shuttleworth Collection at Old Warden at the invitation of Peter Holloway with our Messerschmitt Bf 108 B-1, D-EBFW, and Focke-Wulf Fw 44, D-EMOF. Entering the UK over the Channel, heading to North Weald for customs clearance, our call was, "A Focke-Wulf and a Messerschmitt are entering your airspace". We were received in very friendly fashion at North Weald!

Prof Dr-Ing Heinz-Dieter Schneider

***Sally B* displaying too close for Heinz-Dieter Schneider's camera at the Essen show in 1982.**

Air Force of Zimbabwe Islander serial 3718 in April 1982.

I enjoyed the Database on the Britten-Norman Islander (*Aeroplane* July 2025) and was pleased to see the examples operated by the Rhodesian Air Force rated a mention.

When the Rhodesian Air Force morphed into the Air Force of Zimbabwe in 1980, there were six examples on strength with 3 (Transport) Squadron. I'm pretty sure that's the sum total of Islanders that were ever in Rhodesian military service — serials 7136, 7317, 3718, 7319, 7213 and 7323, or, if you drop the randomly inserted '3' (for the squadron, as was the way with RhAF serials), 716-719, 721 and 723.

The initial acquisitions were Mozambique-registered examples sourced from civilians departing that country when the Portuguese decolonised their African possessions in 1974. At least one later addition came from South Africa, previously ZS-ORD.

All the RhAF/AFZ Islanders were ex-civilian — no Defenders — and they were used for transport, sky-shouting, VIP transport duties and suchlike, never configured with armament. Nevertheless, at least one took small arms hits while conducting sky-shouting duties during the post-independence tribal conflict in Bulawayo. For a long time only five of the six aircraft were actually current; one, serial 3718, underwent a long-term rebuild with Fields following a take-off accident.

There is also a story of a Botswana Defence Force Defender being engaged in an exchange of fire with a Rhodesian Air Force Alouette III helicopter gunship on the Botswana border in August 1979, said to be a very rare occurrence of a helicopter taking out a fixed-wing machine. But that, I guess, is a story for another day.

Jeremy Boyd

The photograph of the two original Islanders on page 92 of the July issue was, I believe, taken on a flight out of Denham. I was there with a photographer from the Central Office of Information who had been called to the Islander photo-shoot. It was exciting to see prototype aircraft in action.

I next experienced the Islander when working in Scotland, where Loganair took me to many interesting and remote places. One was Fair Isle, which then, in 1968, had only a short gravel airstrip. Two colleagues and I arrived at the strip as the Islander landed. The aircraft backtracked and as it turned into wind both engines stopped. When we got into the aircraft the captain said, "They are always doing that!"

At that time I was engaged on a project to provide advanced telecommunications facilities to the Highlands and Islands. We had to move personnel and equipment daily to different locations. I went to Farnborough and opened negotiations with B-N to lease an Islander. They were keen, saying we had the most demanding operational requirement of any of their customers. The project was squashed by a senior manager who argued the pilot (I had volunteered) would have to be paid more than him. I remember helping to push an Islander out of a rutted field in Orkney while the pilot complained B-N would not supply larger wheels for use on the island airfields.

My last experience of the Islander was very special. During a teaching engagement in Ghana I was offered the opportunity to fly a Ghana Air Force Turbine Defender over Accra and southern Ghana. The flight ended in a completely unrehearsed and unexpected ILS approach to Kotoka airport, which I managed to carry off to the satisfaction of my air force companion.

Anthony Knight

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Q&A

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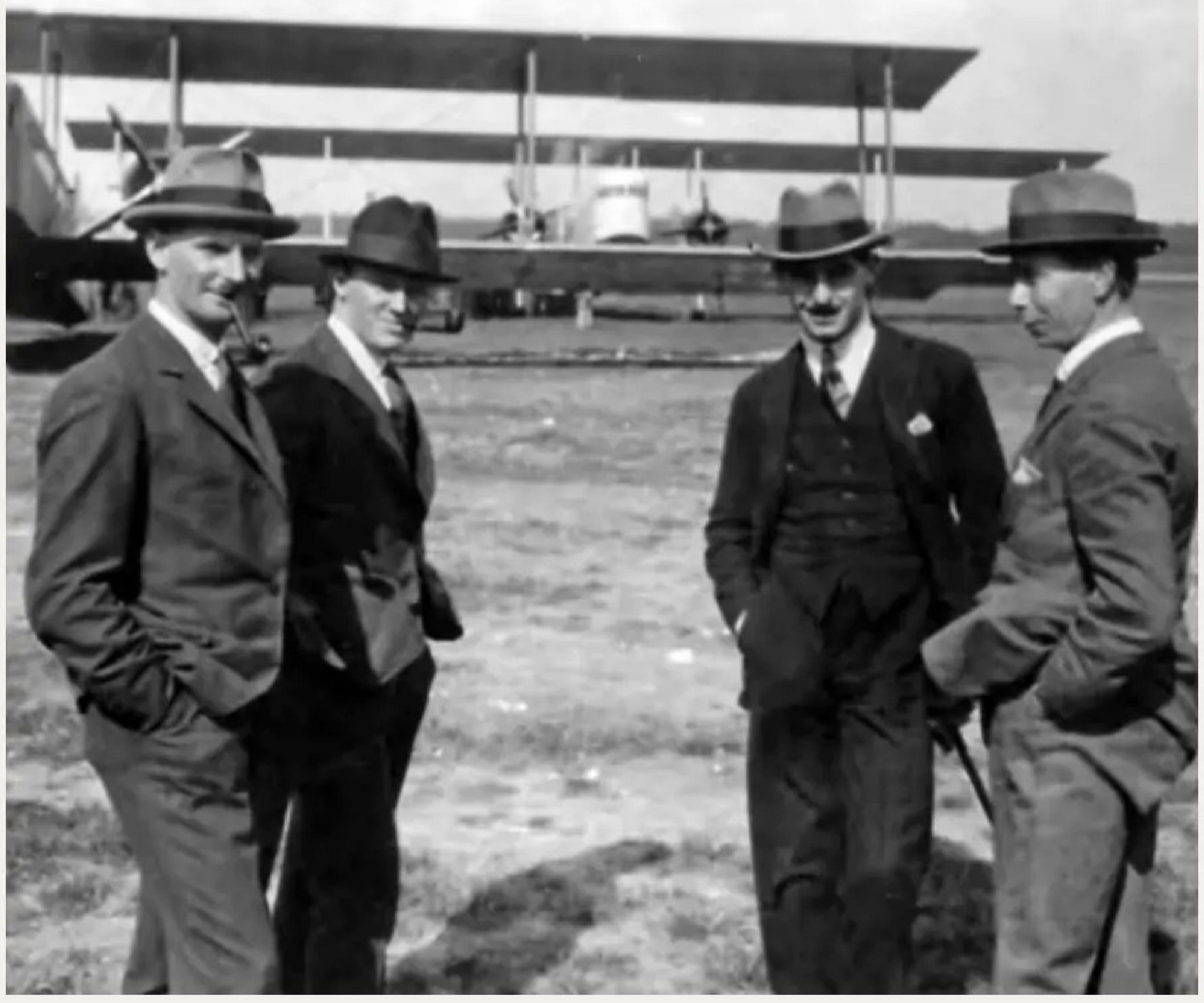
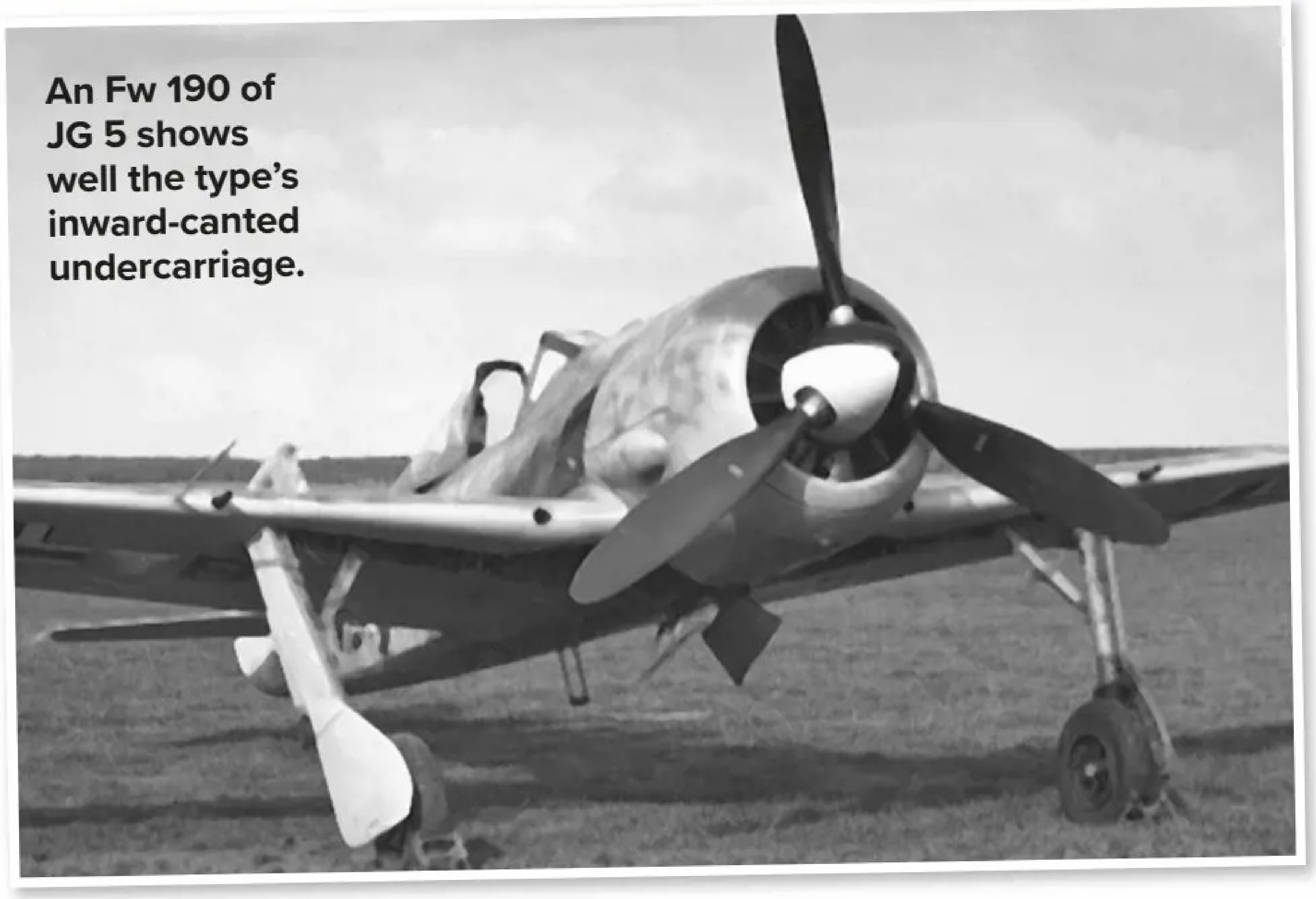
THIS MONTH'S QUESTIONS

Does anyone know who these 1923 visitors to Croydon were?



Croydon VIPs

Q In November 1923 the editor of *The Aeroplane*, Charles Grey, attended an international conference of overseas prime ministers in London with several of the delegates arriving by air at Croydon Airport. Among them were these four un-named gentlemen, pictured by Grey. Charles Harding would be interested in knowing who they were. Perhaps the magazine printed this picture with the names?



An Fw 190 of JG 5 shows well the type's inward-canted undercarriage.

Fw 190 undercarriage

Q Following publication of the Focke-Wulf Fw 190 photograph on page 46 of the October issue, David Dickinson asks why the aircraft's main undercarriage legs exhibit an angle of less than 90° to the mainplane — a characteristic feature of the type?

THIS MONTH'S ANSWERS

Attacks on Cambridge

Q November's Q&A request from Tim Maitland regarding bombing attacks on Cambridge, in which a high-flying Bf 109 was supposedly intercepted by a Polish fighter squadron and shot down as it was preparing to land at its Dutch base, brought a response from a former inhabitant of the city.

A Deryck Chambers lived in Cambridge during the war years; he was a 10-year-old boy staying overnight with aunts on 28-29 August 1941. Deryck confirms that the building destroyed was opposite his aunt's home and the extensive damage resulted in the death of an elderly lady and a four-year-old boy. Deryck would also question the use of a Bf 109 to fly a reconnaissance mission over Britain in that year.

The Leathern Bottle

Q In the October issue, Mike Steptoe asked if anyone recalled a picture of a Hawker Siddeley Harrier outside the Leather Bottle pub near Dunsfold airfield and whether it was mocked-up.

A Bob Millichap responded, firstly to say that the pub's name was actually with an 'n' as shown above, and the picture was indeed staged by the then Hawker chief photographer John Twedell who clearly saw an opportunity to publicise the versatility of the Harrier which, if called upon, could allow pilots to land in the pub car park for a 'swift half', although none did. The pub is now a private house on the main A281 Horsham-to-Guildford road but was a regular lunchtime haunt for many Dunsfold workers.

'Going for guns'

Q October's feature by Charles Barrett on the use of helicopter gunships during the colonial conflict in Angola proved interestingly unusual. Steve Richards asks why the South Africans appeared to change sides, from being in league with China and the CIA to supplying unmarked Alouette III gunships to the Portuguese Air Force. Also, can anyone explain why the CIA appeared to be working against a 'friendly' NATO country?

CORRECTIONS AND CLARIFICATIONS

- Steve Richards notes we were wrong to say in the July issue that Spitfire P9372 was built at Castle Bromwich, since that plant was not yet active in February 1940. Rather, it was manufactured at Woolston.
- The first prototype Shackleton was not VW135, as noted in the June issue's Workshop article, but VW126.
- Chris Thomas points out some caption errors with the Typhoon feature in June's magazine. The colour picture on page 32 shows a No 175 Squadron aircraft, JP736/HH-L, rather than a No 245 Squadron machine; the flying shot on page 34 is a MkIa with six machine guns on either side, not a cannon-armed MkI; and on page 40 the Norwegian pilot holding the scoreboard is not Erik Haabjørn but Flt Lt Gunnar Piltingsrud.

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HEART OF A LION

The Letecké Muzeum Točná's Hurricane I, P3351, being flown over East Anglia by Jiří Horák.

The only airworthy fighter that took part in both the Battle of France and the Battle of Britain already has, by definition, a great deal of history to its name. But now another layer has been added to the lustre of this very fine Hawker Hurricane I, as it becomes a flying memorial to the men of the first Czechoslovak squadron to form in the wartime RAF — and helps re-create a famous moment in their annals

WORDS: BEN DUNNELL **PHOTOGRAPHY:** DARREN HARBAR

Sixteen pilots, three engineers and a dog. Together they make up the best-known image of Czechoslovak involvement in RAF Fighter Command during the Battle of Britain — they and a Hurricane I, of course. Men and machine hailed from No 310 Squadron, captured at Duxford by an official photographer in early September 1940, presumably taking advantage of a gap between operations in a key phase of that summer's events. Before the end of the battle, three of them would lose their lives, all in mid-air collisions. And the Hurricane behind them, P3143, had been destroyed in an ultimately fatal accident.

There is always a poignancy attached to such images, and in this instance it is not lessened by the fact that a high proportion of those men survived hostilities. Such was the appalling persecution meted out to many Czechoslovak airmen who served in the RAF when they returned to their homeland, deemed anti-Communist by the country's new regime. Even with the war over, they found little peace. The appearance of a restored Hurricane I — and Czech-owned to boot — in the colours of P3143 thus symbolises different forms of struggle.

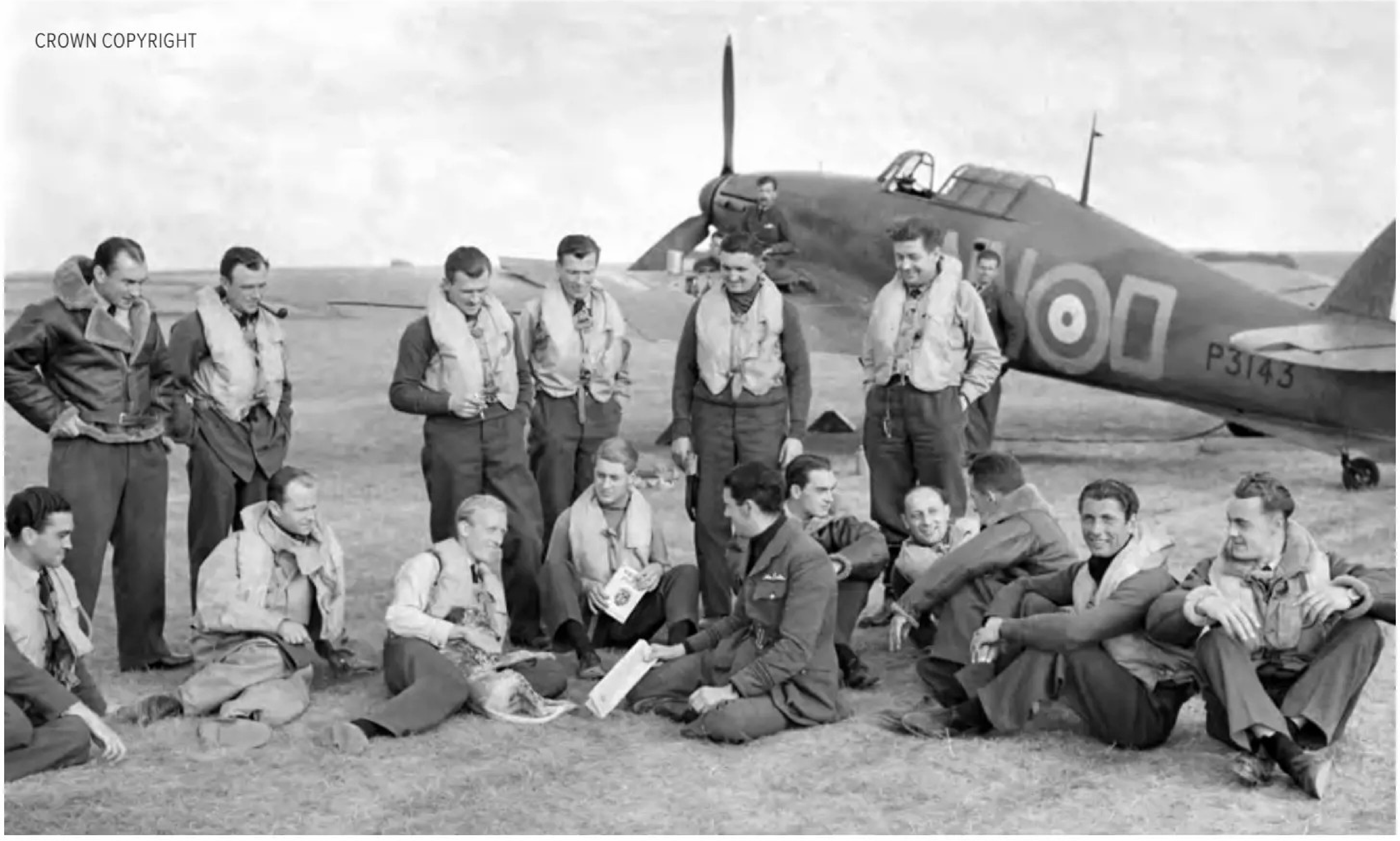
◆

Owned by the Letecké Muzeum Tocná, this illustrious machine has its own unique background, being the sole airworthy aircraft that flew in both the Battle of France and the Battle of Britain. Hurricane P3351, its original identity, also holds a significant place in the preservation history of Hawker's doughty fighter. In visiting Duxford from its base at Tocná, a grass airfield located in Prague's southern outskirts, this past September, it also permitted a partial re-creation of that moment in No 310 Squadron's annals.

When distinguished Fleet Street snapper Stanley Devon — seconded during wartime to the Air Ministry — captured those scenes almost exactly 85 years earlier, the unit was a couple of months old. Its operations record book shows that formation began on 10 July 1940 with the arrival of Flt Lts Gordon Sinclair and Jerrard Jeffries as flight commanders. An initial 24 Czechoslovak officers followed two days later, and six Hurricanes on the 18th, whereupon an intensive work-up could begin.

The record 310, declared fully operational on 18 August, soon notched up in combat spoke for itself. On the last day of August, as its diary proudly states, "Nine enemy aircraft destroyed and one probably so within a fortnight of becoming operational and within six weeks of formation provides a record of which no squadron need feel reason to be ashamed". A month later, the Czechoslovak unit had increased these figures to 37-and-a-half destroyed, 10 probables and five damaged.

The well-known P3143, built by Gloster and delivered to Duxford on 24 July, had played its part. Leading a patrol by Yellow section over North Weald on 3 September, in the hands of Sinclair it shot down a Messerschmitt Bf 110 and Dornier Do 17 Z. Further success came its way on the 7th. A morning sortie by Sgt Bohumír Fürst proved uneventful, but not so a late-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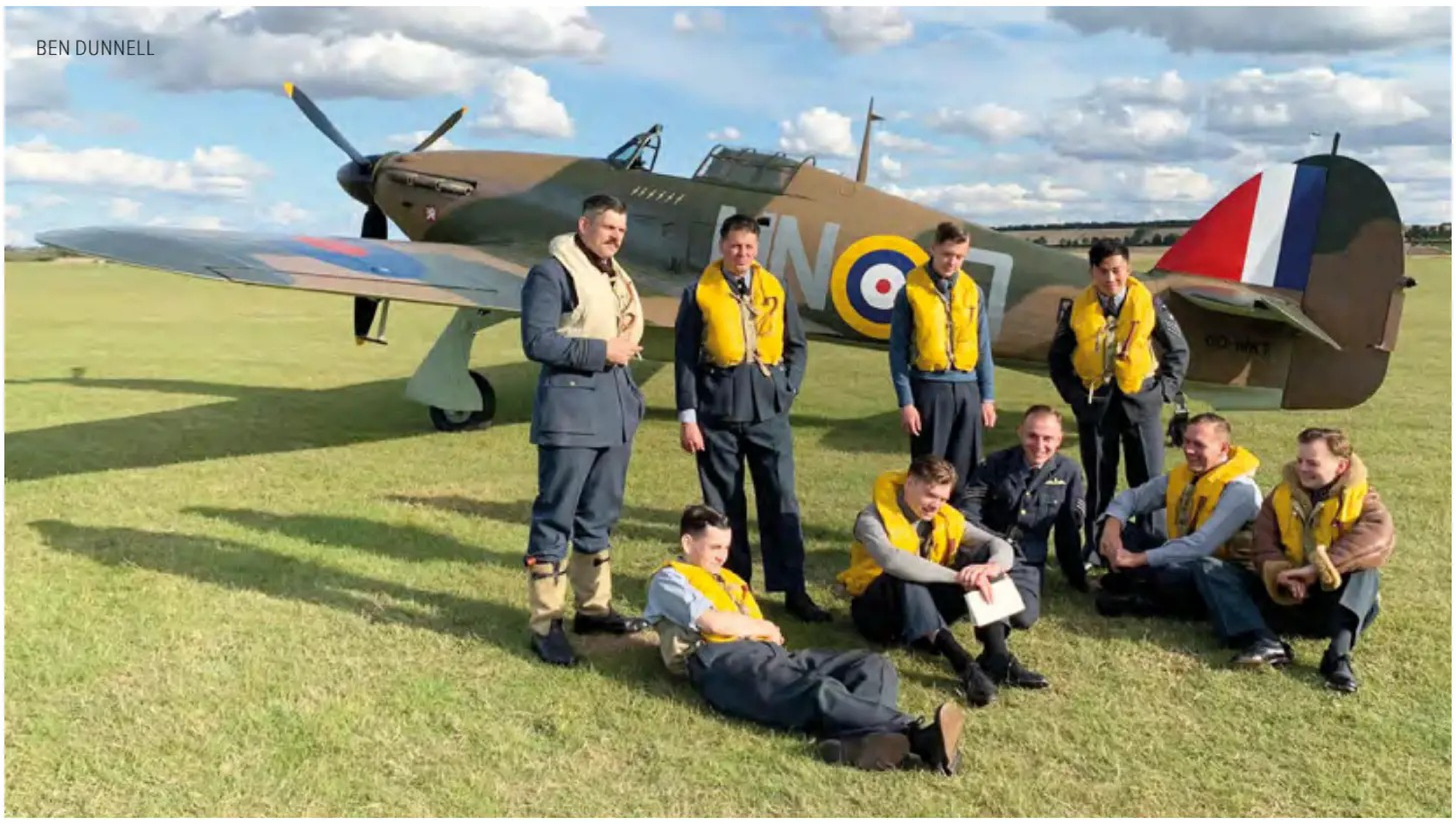
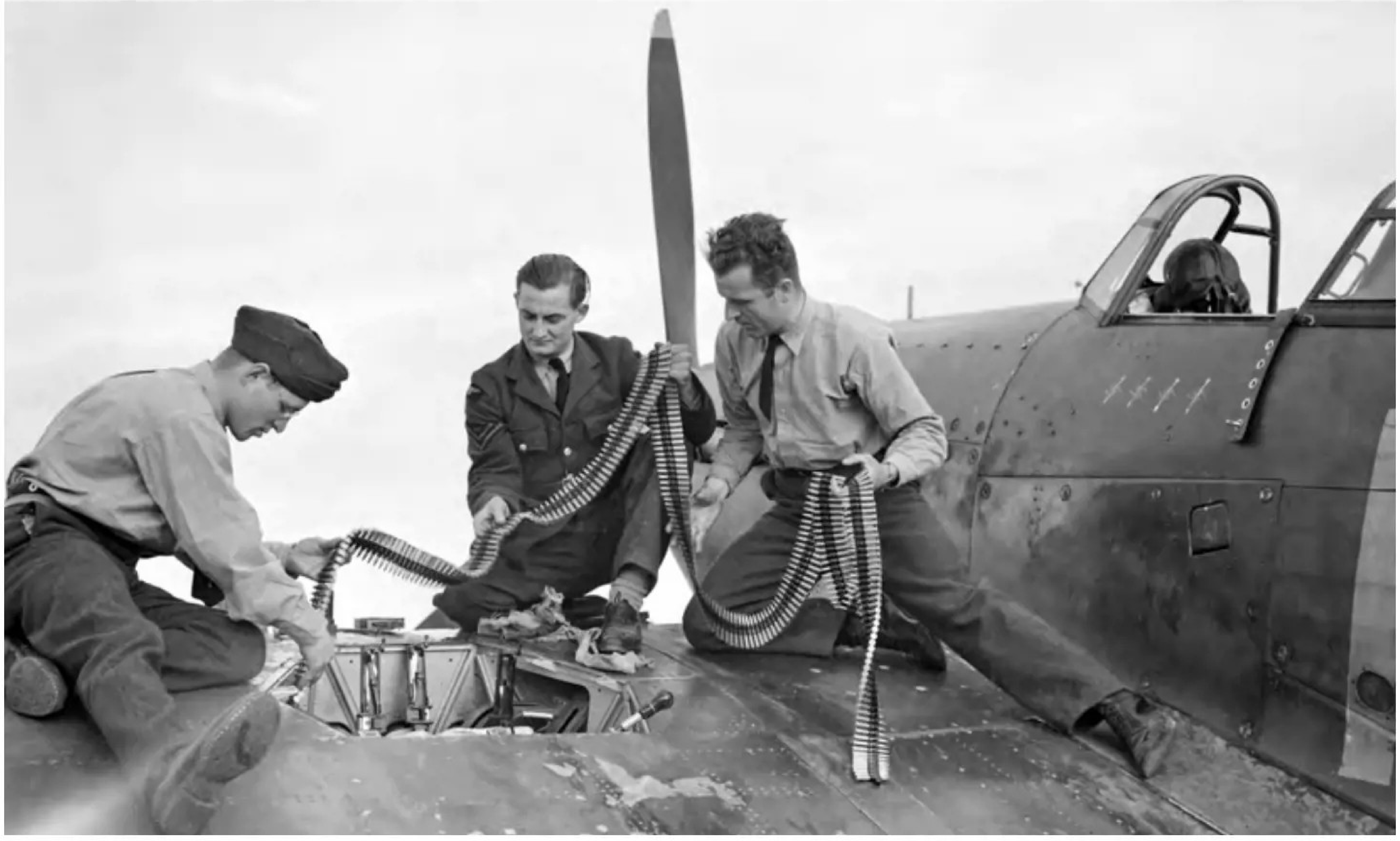

BEN DUNNELL

TOP AND ABOVE: The well-known image of No 310 Squadron pilots with Hurricane P3143 at Duxford during September 1940 features, standing left to right, Plt Off Svatopluk Janouch, Sgts Josef Vopálecký, Rajmund Půda, Karel Šeda, Bohumír Fürst and Rudolf Zima; and sitting left to right, Plt Off Vilém Göth, Flt Lts Jaroslav Malý and Gordon Sinclair, Fg Off John Boulton (an instructor attached to 310 who also flew with it operationally), Flt Lt Jerrard Jeffries, Plt Off Stanislav Zimprich, Sgt Jan Kaucky, Flt Lt František Rypl, and Plt Offs Emil Fechtner and Václav Bergman. Eighty-five years later, there weren't quite enough costumed re-enactors to fully replicate the scene, nor a dog, but it was a good effort.



LEFT:
This September 1940 view of armourers replenishing P3143's ammunition helps date the famous official images of the aeroplane, which are cited as having been taken on 7 September. It shows four kill symbols, while the group photo includes instructor John Boulton, who was killed on 9 September in a mid-air collision. P3143 had scored three kills and one probable by the end of its combats on the 7th, so the photos were captured some time between then and the aircraft's next victory and Boulton's loss, both of which took place on the 9th. CROWN COPYRIGHT

afternoon mission as part of the newly formed Duxford Wing with Nos 19 and 242 Squadrons, the man from Opatovice in Moravia claiming a Bf 110 C as a probable near Whitstable and a Bf 109 E destroyed over Canterbury. When Plt Off Stanislav Fejfar downed another Bf 110 south of London on the 9th, return fire damaged the Hurricane's starboard machine gun port.

Fürst was in the cockpit of P3143 again on 15 September, described in the squadron record as, "a busy day — one of the busiest and most successful that the RAF have had since the outbreak of war". Once more wing patrols were the order of proceedings, Fürst launching as part of Red section at 14.15 "to intercept an enemy raid on London". His 'bag' was a Heinkel He 111 H-2, one of four Luftwaffe bombers claimed destroyed by 310 on that occasion. With Fighter Command in the ascendancy, on the 18th Sgt Eduard Prchal notched up a victory against a Junkers Ju 88 A which came down near Stanford-le-Hope.

Sgt Bohumír Fürst achieved more combat successes in P3143 than any other pilot. The English setter mascot was called Hero. CROWN COPYRIGHT

Thirteen different Czechoslovak pilots flew P3143. The last, on 16 October, was Sgt Jan Chalupa. Recently graduated from No 6 Operational Training Unit, the 21-year-old had only been with 310 for a day when he was sent up on a training detail. Reportedly P3143's Merlin engine failed and caught fire and Chalupa bailed out near Ely railway station. Alas he may have hit the tail in so doing and been knocked out. His parachute failed properly to deploy and he died in a local hospital. Today, a small but important part of his crashed aeroplane survives, and Hurricane P3351 offers its own salute. But how did this airworthy example end up in Czech ownership?

"It's a long story", says Jirí Horák, an easyJet Airbus A320 captain and a Czech Air Force reservist in its fixed-wing transport squadron at Kbely. He has managed the acquisition and importation of several historic aeroplanes for fellow members of the Classic Trainers organisation in Plzen. The owner of the Letecké Muzeum Tocná, entrepreneur Ivo Lukacovic, is a friend. Lukacovic had looked at buying a Hurricane circa 2014, but decided not to go ahead at that stage. Then he proceeded with the purchase of MkIV KZ321/OO-HUR, acquired in 2021 from Bernard van Milders in Belgium. Tragically this example was lost in an accident while displaying at Cheb on 14 August 2022, along with pilot Petr Paces.

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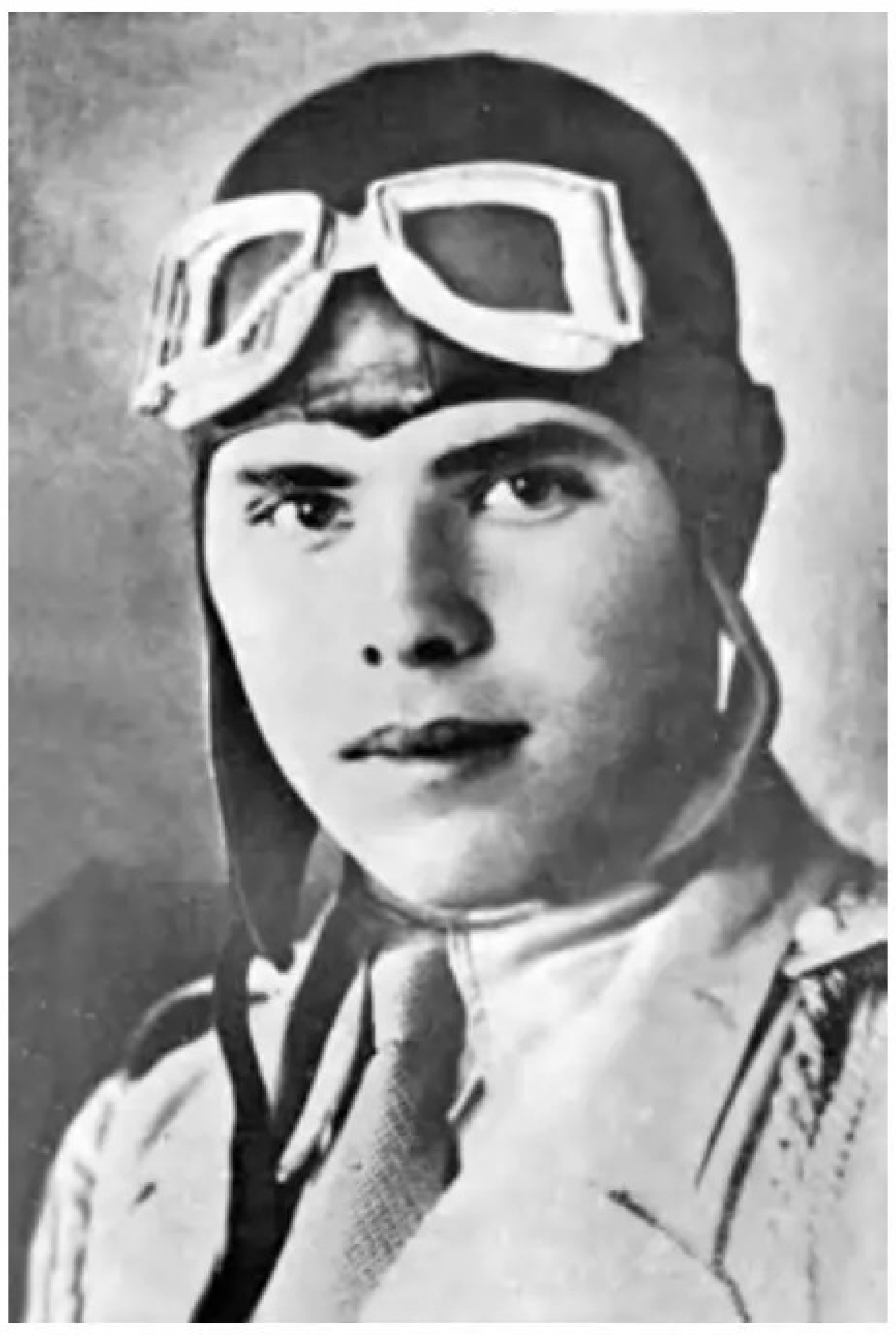
"A couple of months afterwards", recalls Jirí, "we were sitting in a hangar at Tocná and Ivo was asking whether we'd be able to have another Hurricane. I said yes, we could do it. He set strict rules about how we were going to operate it, because he really wanted to make sure no-one was going to damage this aeroplane. It had to be flown in a safe way. So, the story of the second Hurricane started back in late 2022.

"As I know Simon Brown from Platinum Fighter Sales, I just rang him and asked him if he had any Hurricanes for sale, because there was almost nothing around. He said, 'Well, maybe…' About 14 days after that he got back to me and said he'd got one. He explained it wasn't really for sale, but we might reach an agreement with Hawker Restorations. Meanwhile I was talking with a couple of guys, but for many



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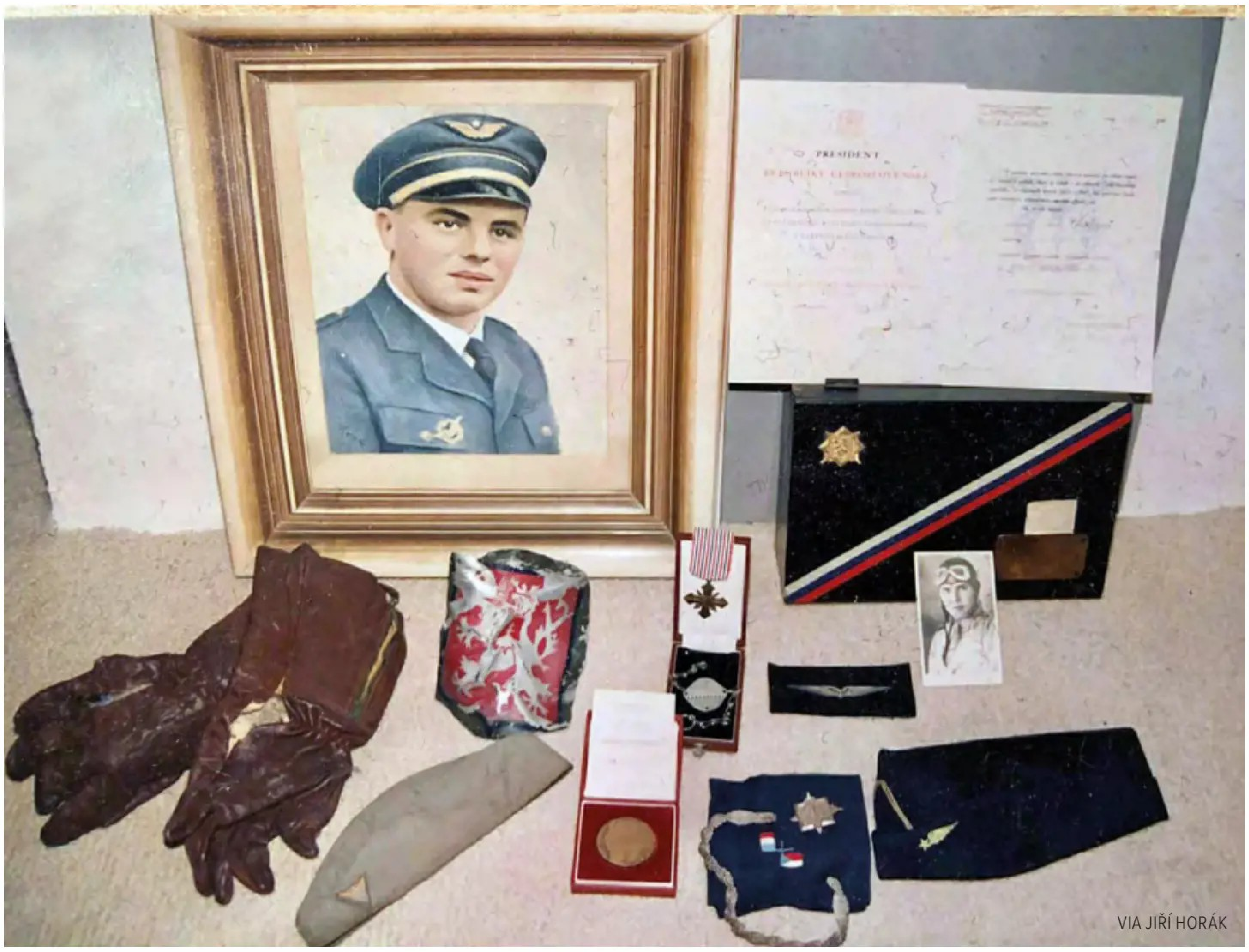

VIA JIŘÍ HORÁK

ABOVE AND RIGHT: Having joined No 310 Squadron straight from training, Sgt Jan Chalupa lost his life in P3143 on 16 October 1940. Some of his personal effects and other items, including the battered, blue-outlined lion emblem recovered from the wreckage, are held by the Moravské Zemské Muzeum in Brno, Chalupa's home city.

reasons we chose this one, because it's got a great history behind it."

Hawker Restorations had bought P3351 back from Cannes-based collector Jan Friso Roozen. "It had flown over to Elmsett in 2022, and they started to rebuild it as a two-seater. Literally we saved it from that, and I was really happy about it. The two-seater Hurricane is a really nice aeroplane, but to rebuild this particular one, with its history — the Battle of France, Battle of Britain, the Russian Front — would have been a stretch to me. We finally reached an agreement with Hawker Restorations in early 2023 and work started on it.

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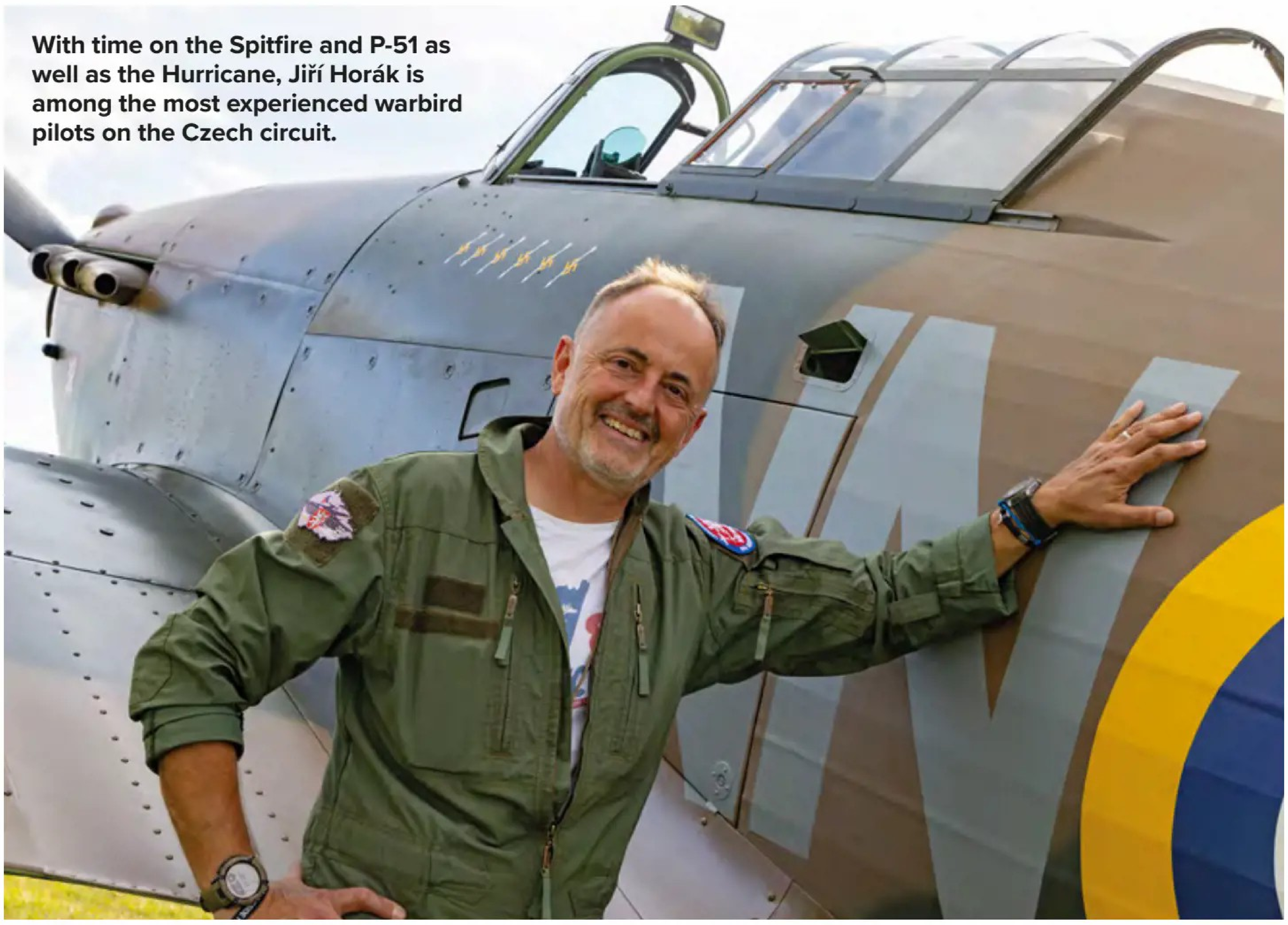
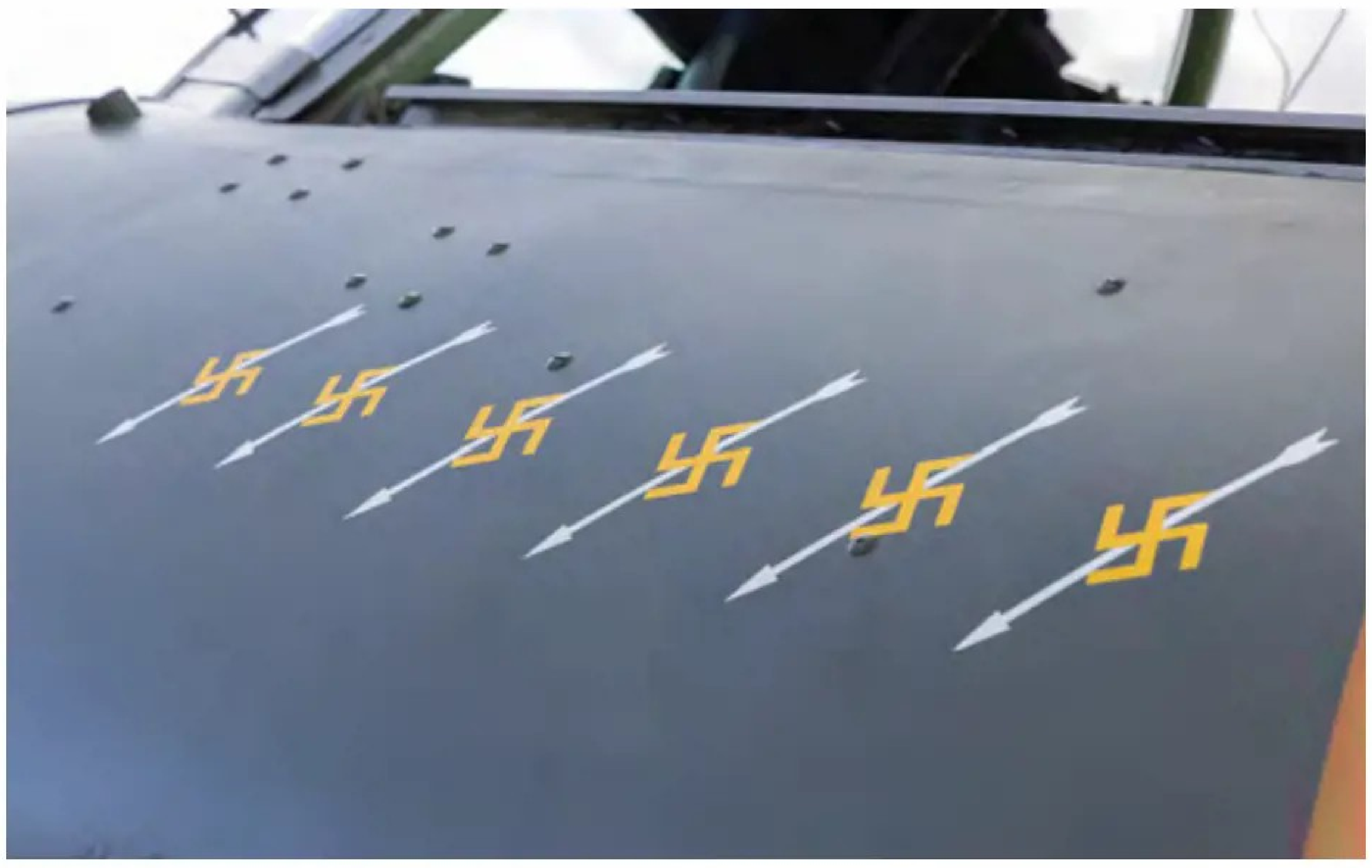
"It took a bit longer than I expected — I was estimating maybe a year, year-and-a-half maximum, but it was two years. We went through the pre-purchase inspection and we found the aircraft was in quite good shape, because it had been restored to excellent condition by Air New Zealand for Sir Tim Wallis. But we had to take a deeper look into the structure, we had to send the engine for overhaul at Vintage V-12s in the US because it wasn't in very good shape at all, and the propeller was overhauled by Skycraft in England. There were so many things we wanted to redo, and also parts to find, because the owner wanted to make sure the aircraft was immaculate.

"We overhauled the landing gear and fitted an all-new retracting mechanism. We had to think about the Irish linen covering, and we decided to keep it. Basically the fuselage was in such good shape when we took all the dope and paint from it that we left it like it was. We re-doped and painted it, and we re-covered the tail and all the flight controls. Some wooden parts were replaced, but the wings were in superb



With time on the Spitfire and P-51 as well as the Hurricane, Jiří Horák is among the most experienced warbird pilots on the Czech circuit.



The victory symbols worn by Hurricane P3351 in its guise replicating P3143 cover the latter's six confirmed kills.

condition. On the left wing we installed replica guns with all the .303 ammo.

"There was a real issue with the hydraulic selector, because the selector installed on this aeroplane was very rare for a MkI and you can't find anything like it any more. We secured a MkII hydraulic selector for it. A lot of work was done on the radiator — the old one was leaking, and basically junk. It was a long process, but we worked with Gerry Marshall [of Anglia Radiators in Cambridge] to build a new unit. Finally we ended up with a very good one which we trust, because it's a single-point failure item. If you don't trust your radiator, you can't fly the aeroplane. That was a big job.

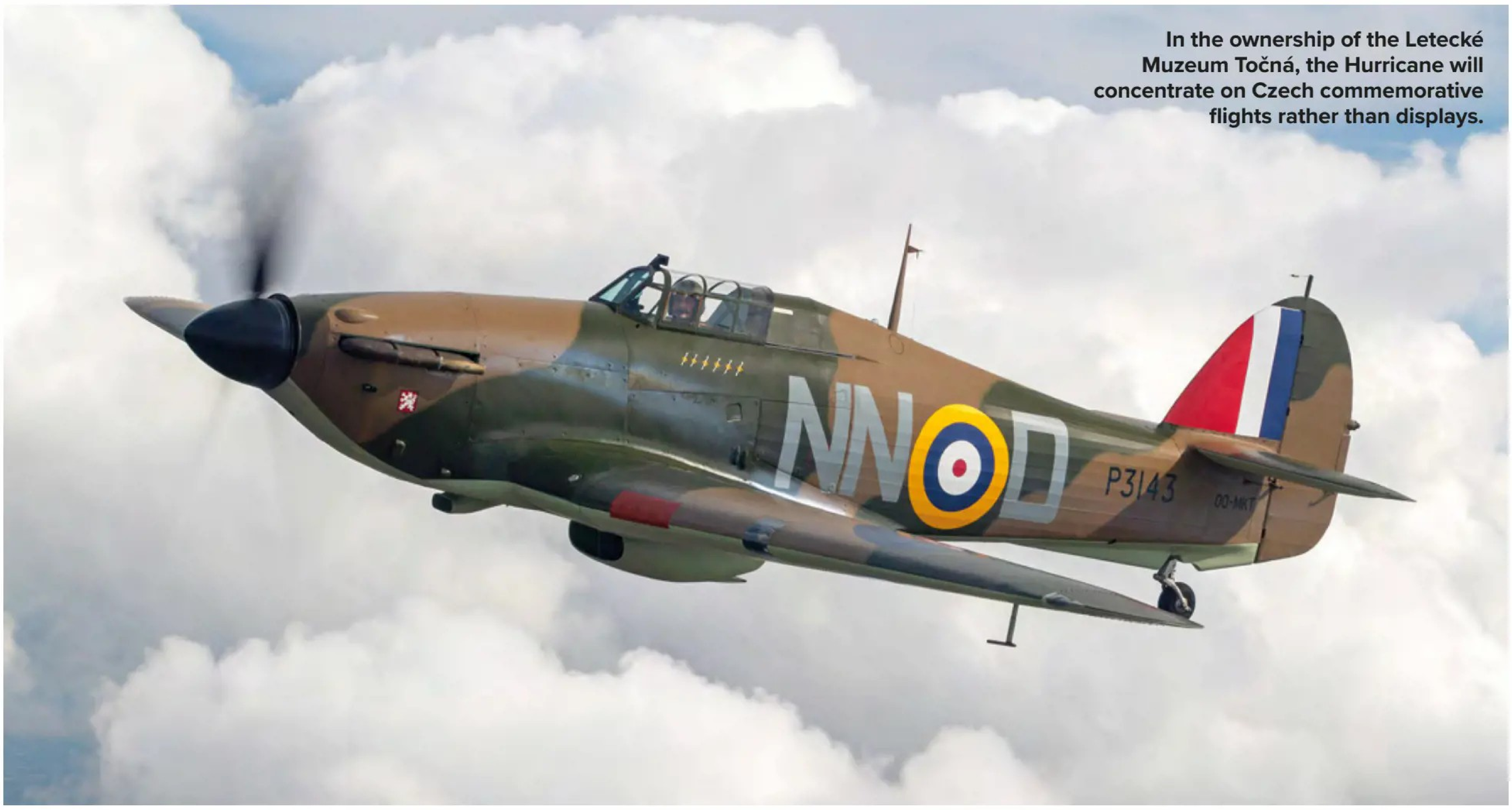
"I spent quite a bit of time searching for a gunsight, as the early type is very rare. It had a MkII sight from 1941 with square glass, like on a Spitfire, but we secured one for a MkI. And the compass was a challenge… There were lots of small things slowing us down. And the paint job itself lasted a long time, because we wanted it to be down to the last detail, but Hawker Restorations did a very good job. We had to redo some parts, but that's normal. I would say it's a very eyecatching scheme."

The selection of that scheme was what Jirí calls "the biggest question-mark". Keeping it in the original No 73 Squadron garb the aircraft had worn since its first restoration was one possibility. Then there were two other options from its RAF service, Nos 32 and 71 Squadrons, each notably illustrious outfits. "But", he continues, "there were no photos". Nor were there any links between Czechoslovak pilots and those units during the relevant periods. "So we decided to choose a scheme which would be attractive to people and which we would be very proud of. No 310 Squadron was an obvious choice, but which livery? In the Battle of Britain, 310 had many nice liveries on its Hurricanes. There were a couple of schemes with kill symbols. We narrowed the discussion down and wondered whether there was an aeroplane which was well-documented. I said, 'Well, we have NN-D — it's probably the most-documented aircraft from the Battle of Britain!'

"There was NN-J [V6579], which was an eyecatching scheme. It was the wing commander's aircraft, and for a very short period in November 1940 the RAF introduced a livery which had sky and black on the undersides for quick identification, very similar to the white and black used during the Battle of France. NN-J had that, and the wing commander's pennant on the left-hand side of the fuselage. But then I looked into NN-D, and it was flown by so many well-known Czechoslovak pilots including Alexander Hess, the squadron commander. I approached the owner and said, 'NN-D is the obvious choice. What do you think about it?' He told me, 'If you think it's OK, just do it'. And it was a very good choice.

"We worked on it with Steve Atkin — we worked together on the first Hurricane, and I really learned a lot from

> ***"The owner wanted the aircraft to be immaculate"***



In the ownership of the Letecké Muzeum Točná, the Hurricane will concentrate on Czech commemorative flights rather than displays.

him. Amazing guy. It was a long process to decide the right scheme in detail, and it was real museum-quality work. It's got different Ds on both sides, because the D on the right-hand side was different from the one on the left. There were lots of discussions about the swastika kill markings, and whether they were red, yellow or whatever. We decided they were yellow, most likely.

"And the lion symbol: the normal colour of the outline around the lion badge on No 310 Squadron aircraft was yellow. Only this Hurricane has got a blue one. How we know that is very easy. A portion of the left cowling from that aeroplane is in a museum in Brno, the Moravské Zemské Muzeum [Moravian Museum]. A No 310 Squadron mate of Sgt Chalupa took it and preserved it through the whole war. They brought it back and donated it to his family."

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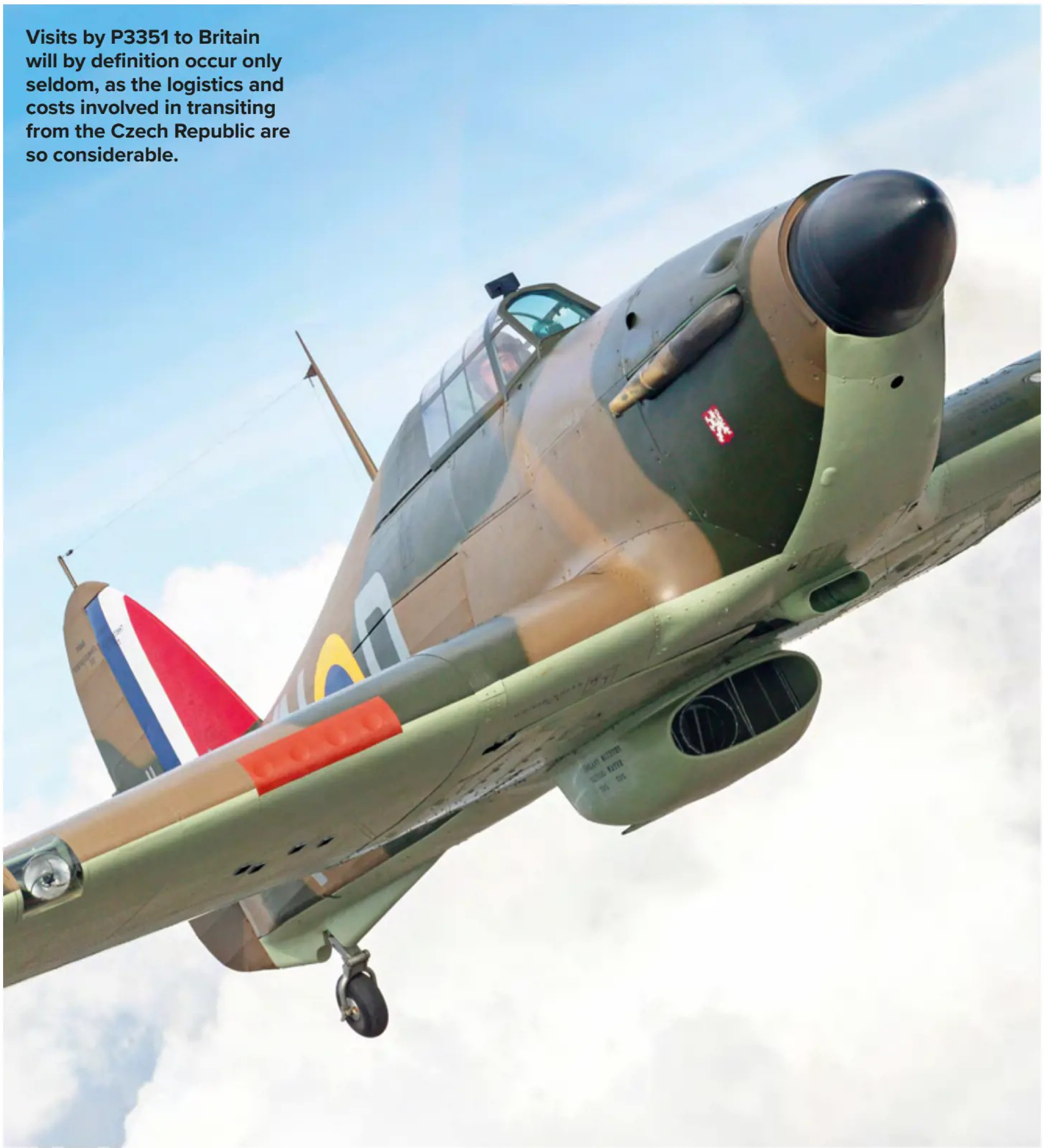
Before P3351 was reflown, the aircraft joined the Belgian register as OO-MKT. This is becoming an increasingly popular option with warbird owners around Europe. "We have been working with Frédéric Vormezeele of FAST Aero at Brasschaat for quite a long time. The previous Hurricane was Belgian-registered as well, and so is the Mustang we have in the Hangar 3 museum at Plzen-Line [P-51D *Little Rebel*]. It's quite easy to go for the Belgian register because having a British aeroplane on a permit to fly after Brexit is a real pain. The Belgians are easy-going and we have good connections with the local CAA."

Once the aircraft was ready, thoughts turned to its return to the air. "The airfield at Elmsett tends to be very wet during the wintertime, so I talked to Stu Goldspink and to Hawkers about how we could manage that. In the end, because Hawkers had done it before, we reached an agreement with the station commander at Wattisham. We would do one flight out of Elmsett, finish it at Wattisham, and complete the rest of the test-flying there. Then we would most likely do some other flying, for familiarisation with the aeroplane, from Wattisham as well."



Visits by P3351 to Britain will by definition occur only seldom, as the logistics and costs involved in transiting from the Czech Republic are so considerable.

The former RAF fighter station, now in Army Air Corps hands as Wattisham Flying Station and the AAC's main operational Apache attack helicopter base, is a few miles north of Elmsett. In fact, such is their proximity that Elmsett sits within its air traffic control zone. When it was located at Milden, Hawker Restorations had used Wattisham for test-flying of its own Hurricane X, AE977, and the Flying Heritage Collection's Sea Hurricane Ib BW881, so there was a history of doing so. What's more, the pilot for both their maiden flights, on 7 June 2000 and 15 March 2006 respectively, had been Stu Goldspink.

He first flew P3351 during the aeroplane's Alpine Fighter Collection ownership, when he was invited to display at the 2002 edition of Warbirds over Wanaka. Repeat performances took place at the 2004 and 2006 shows. As of now, Stu is by far the most seasoned of all current Hurricane pilots, with 13 of the type in his logbooks. Back in 2002, there were rather fewer, but he recalls finding it, "noisy, shaky, hot, but very characterful — just like all Hurricanes". Returning to P3351 nearly 23 years later, he's got far more to compare it with.

A cold winter's day in Suffolk, 17 February 2025 saw the big occasion, though this didn't need to be as involved an affair as some. "It wasn't a particularly thorough test flight I did on it", says Stu. "It was more making sure it was all OK after a fairly major rebuild. I flew around for a bit to see that it was all behaving well. It flew pretty straight. They'd taken some chord off one of the ailerons and they were expecting it not to fly straight and level, but it did."

One problem did manifest itself at the end of the trip. "Landing at Wattisham on the easterly runway was, to say the least, a bit frightening… It had severe tailwheel shimmy. But once I stopped, I taxied very slowly and it was fine at that stage. I taxied to the hangar, jumped out and said that was the only thing particularly wrong with it. They fixed it very, very quickly. A day later I got in it and flew it again, and there was no more trouble at all."

Of this, Jirí recounts, "We had to take the tail gear assembly out and put new springs in it. It's a castoring tailwheel but with a centring mechanism. But the next day it was ready to go flying, and Stu was really happy with the aeroplane. It did three more flights, of which the last one was just for fun because the aircraft had been test-flown and everything was working fine. The army was very nice to us, and gave us a big, heated hangar that was just for the Hurricane. We were able to walk around the base with no escorts.

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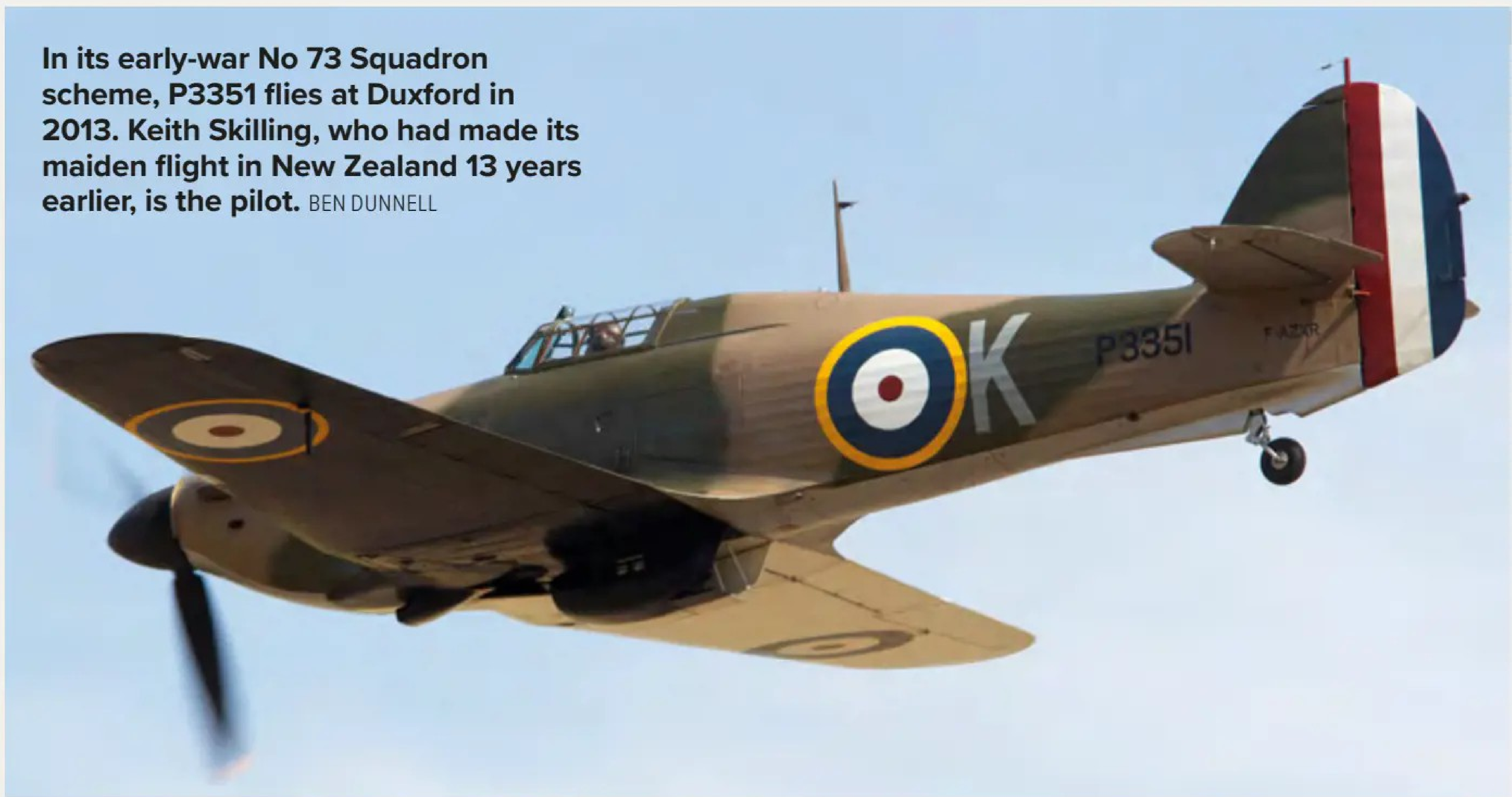
"There was lots of paperwork to do, because the aircraft was still not accepted by the Belgian authorities. We had to write all the reports, and based on the Belgian paperwork we needed to get a permit to fly over the UK. It took about a month. A week before the agreed day we would fly again, the station commander called Hawkers and said they needed the hangar, so we had to leave in a few days. Frédéric has a pretty good connection to the Aircraft Restoration Company, so he called [ARCo engineer] James Gilmour. He, obviously, had to talk to John Romain, but they said we were more than welcome in their hangar and that they would support all of our flying.

"Frédéric took it to Duxford on 17 March and we did the rest of our flying there, which was absolutely amazing and exciting. Flying a Hurricane from Duxford is something I'd never imagined I would do. And we really appreciated it during our time with ARCo when the Imperial War Museums moved the Hurricane into Hangar 3, which was, to the best of my knowledge, where the No 310 Squadron Hurricanes were hangared during the Battle of Britain. We did quite a bit of flying — Dan Griffith flew it, I flew it and Frédéric flew it. Then on 4 April I ferried it to Brasschaat, via Calais, and after that I brought it to Prague.

"The concept of operations is very simple. We don't do any aerobatics with it — it's a 1940 aeroplane and it's very valuable, so we don't want to

BATTLE-HARDENED



In its early-war No 73 Squadron scheme, P3351 flies at Duxford in 2013. Keith Skilling, who had made its maiden flight in New Zealand 13 years earlier, is the pilot. BEN DUNNELL

Built by Hawker at Brooklands, Hurricane I P3351 was taken on RAF charge during early April 1940. It was delivered at the end of May to No 73 Squadron, then part of the Advanced Air Striking Force, and ferried across the Channel in time for the closing days of the Battle of France. Based at numerous sites including Échemines, 73's main advanced airfield north-west of Troyes, P3351 flew several operational sorties.

The aircraft left France on 18 June. Departing Nantes in the hands of its regular pilot Plt Off Peter Carter, it, 10 other Hurricanes and a supporting Handley Page Harrow stopped at Boscombe Down and Tangmere before continuing to 73's new base at Church Fenton. As part of No 13 Group, 73 served in the Battle of Britain in a night fighter role. P3351 saw its first combat of the battle on 12 July, but it nosed over in a landing mishap following a night training flight on the 21st and needed repair. Reallocated on 6 September to No 32 Squadron at Acklington, the machine flew North Sea patrols but engaged in no further combats. Another move took it on 21 December to the American-manned No 71 'Eagle' Squadron at Kirton-in-Lindsey, and later — once it had recovered from another landing accident — Martlesham Heath.

The final RAF assignment for P3351 was to No 55 Operational Training Unit at Usworth. It was fortunate to escape a May 1941 mishap when a Polish instructor flew his mount into some power lines, managing to recover safely to Ouston where repairs were effected. A forced landing on 9 September 1941 did not end as well, curtailing the now obsolete MkI's flying career. But, via periods with maintenance units, it was destined soon to resume.

The aeroplane was upgraded to Hurricane IIa standard with a Merlin XX engine in preparation for shipping to the USSR under Lend-Lease. A new serial, DR393, was allocated too. As part of a batch of 24 Hurricanes it sailed from Glasgow on 3 May 1942 aboard the SS *Ocean Voice* within Arctic convoy PQ16. The ship was attacked and badly damaged while approaching the Russian coast, yet reached the port of Murmansk. P3351 went on to serve with the Soviet Air Force and was probably shot down in the winter of 1943, maybe by ground fire.

Its extremely substantial wreckage was recovered in 1991. P3351 was brought to the UK in the ownership of Jim Pearce before acquisition by New Zealand businessman and pilot Sir Tim Wallis during 1992. To restore it he formed Hawker Restorations as a joint venture with UK-based Tony Ditheridge, making this a crucial airframe in the history of Hurricane rebuilds. In fact, as Jiří Horák notes, "P3351 was HR's first and sadly last project". Involved as well was Air New Zealand Engineering Services, to whose facilities in Christchurch the part-completed machine was shipped by the end of 1995.

With Keith Skilling at the controls, the Hurricane flew again at Christchurch on 12 January 2000. It formed part of Wallis's Alpine Fighter Collection at Wanaka, but as that fleet was dispersed P3351 went on the market. Jan Friso Roozen was the purchaser, and it was transported to France in February 2013. Several years of operation ensued, from Cannes-Mandelieu and Aero Restauration Service's facility at Dijon-Darois. It was the latter location that P3351 left during 2022 when it headed to Hawker Restorations' Elmsett premises, a stay which eventually took in a further sale to the owner of the Letecké Muzeum Točná and this fine warbird's latest revival.

risk anything. The main purpose is to exhibit it in the Tocná museum and to fly it once or twice a month. It will be used for ceremonial purposes, like flying over places where Czechoslovak Air Force pilots were born, memorial unveilings and other locations related to significant events in the Second World War. We started this with No 310 Squadron, flying from Tocná to a couple of places where they were born, or where they passed away. It's been very popular and people love it.

"We are building a co-operation with the Czech Air Force to fly with its Gripens in a three-ship formation. And something we have in our plans is to fly with the Avro Anson of RAF Station Czechoslovakia... most likely it'll be in the spring of next year."

There have, meanwhile, been a couple of airshow appearances. These will be limited each year to one at home and one abroad, if there is a link to Czechoslovak pilots. P3351 made its Czech debut at Pardubice for the Aviatická pout event at the end of May, but the year's premier engagement was Duxford's Battle of Britain Air Show in September, marking the 85th anniversary of the battle with a record eight-strong Hurricane gathering. "I originally talked to [Duxford flying display director] Al Lockwood in March about our flying there", says Jirí. "After that we received an invitation we really could not refuse."

He flew the aircraft from Brasschaat to Duxford on the preceding Friday, and Dan Griffith displayed it in the Hurricane eight-ship on Saturday's programme. Jirí then, to his regret, took P3351 home later that afternoon rather than staying for the whole weekend. "The following week we had to do some filming in Prague, participating in a movie project filmed by Czech television about Josef František [the Czechoslovak pilot who was the RAF's highest-scoring non-British ace of the Battle of Britain]. That was quite important for us. The issue was that the weather forecast was very bad and we wouldn't be able to ferry the aeroplane back during the week, so, sadly, we took the decision to leave early. But if we get asked again, we'd be very happy to stay for as long as we can."

The privilege of operating any historic aeroplane is considerable, and a rare Second World War veteran specimen such as this even more so. But in the case of Hurricane P3351, the only one of its ilk in a country which is so closely and indelibly linked with the type, that responsibility is multiplied. While the last survivor of those featured in that famous 1940 photograph is now long gone, their legacy is being brought more vividly to life than ever before.

CZECH CONNECTIONS

The Cambridge Flying Group's Tiger Moth G-AOEI and Shuttleworth's Spitfire LFVc AR501 parked at Old Warden with P3351 — a unique gathering with Czech connections.

Not long after arriving at Duxford for its September appearance, Hurricane P3351 had another pilgrimage to conduct. It made the short hop over to Old Warden, where the opportunity to park the No 310 Squadron-marked fighter with the Shuttleworth Collection's Spitfire LFVc, AR501, was not to be passed up. After all, AR501 is a genuine combat veteran with No 310 Squadron and its fellow Czechoslovak unit, No 312 Squadron, and appears today in 312's colours. But why was a yellow, civilian-schemed Tiger Moth with them?

This is, in short, no ordinary Tiger. The Old Warden-based Cambridge Flying Group's G-AOEI started life in the RAF as N6946 and was operated in France with No 81 Squadron during 1940. Thus, it and Hurricane P3351 are two of just three surviving, airworthy aircraft that flew with the RAF from French soil in the course of that campaign. The third is another Tiger, N6847/G-APAL.

Then there are its Czechoslovak connections. Back on British soil, from 1940-44 N6946 was stationed at Hendon in the training and communications role, first with No 24 Squadron and then No 510 Squadron, which was split off from 24 to operate its lighter types. While the Battle of Britain was raging nearby, 27 Czechoslovak pilots were posted to No 24 Squadron as a means of familiarisation with British equipment and procedures, as well as providing them with refresher training and navigation exercises. It is known that at least a dozen of them flew N6946. What's more, logbooks show that in December 1943 it was twice flown by Bohumír Fürst, Hurricane P3143's most prolific Battle of Britain pilot. By then he was flight commander of 510's 'B' Flight.

And one man provides another link. Jaromír Střihavka was posted to No 310 Squadron at Duxford just before the end of the Battle of Britain, though he did so after P3143 was lost. Following a spell with No 19 Squadron — which by then had moved away from the Cambridgeshire aerodrome — he spent two separate periods on 310, now operating Spitfire Vs, and flew sorties in AR501. In the post-war UK he continued flying privately and was an early member of the Cambridge Flying Group, where G-AOEI was the last aeroplane he flew as pilot in command. For his son Alex Scott to be in attendance that day at Old Warden, with a Tiger Moth and Spitfire his father actually flew and a Hurricane in the colours of the squadron he first joined, is exceptional testament to the manner in which historic aviation can make possible the most compelling tributes.

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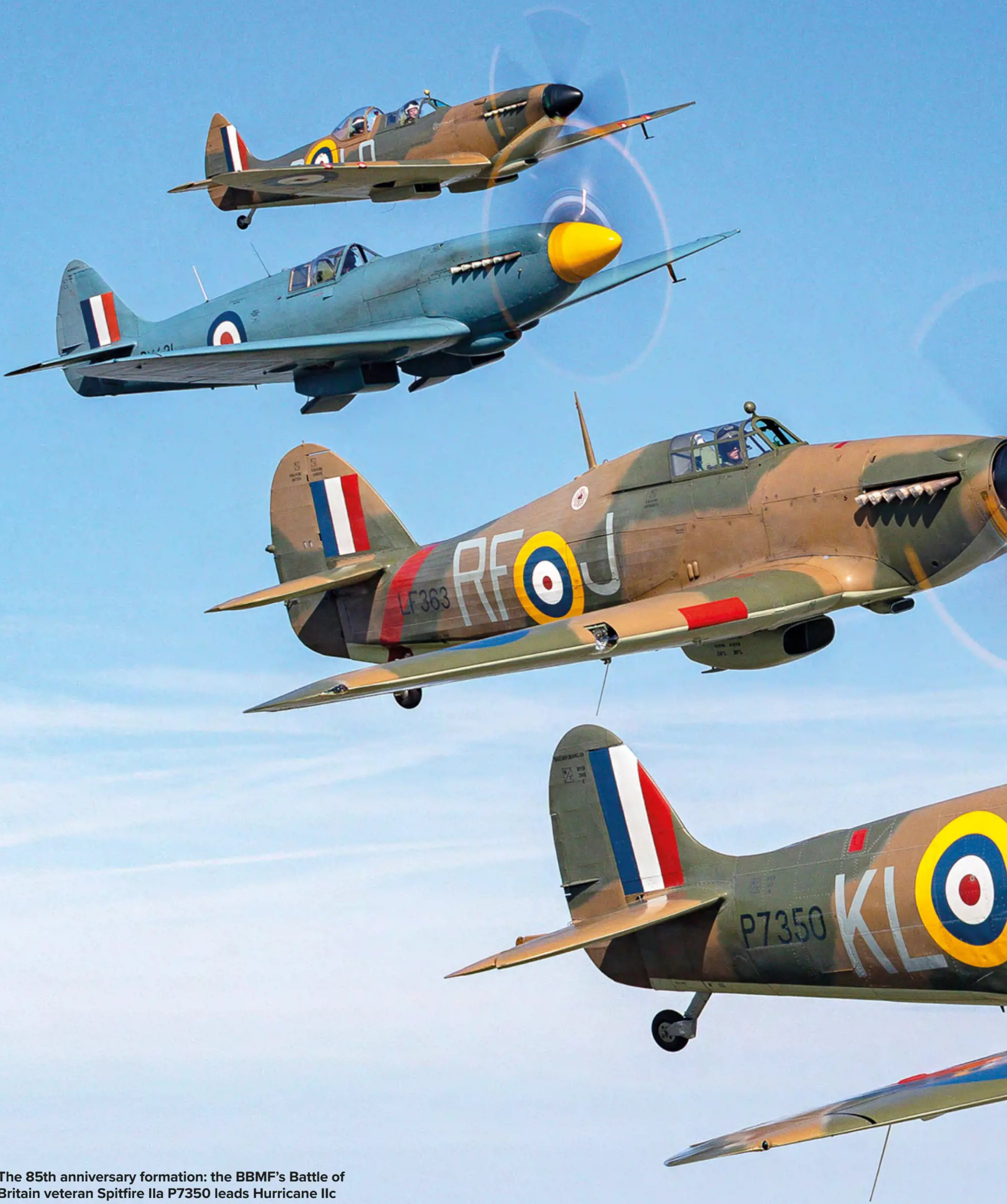

The 85th anniversary formation: the BBMF's Battle of Britain veteran Spitfire IIa P7350 leads Hurricane IIc LF363 and Spitfire PRXIX PM631, with Spitfires.com's Spitfire IXT SM520 — in which Tim Peake flew in the back seat — outboard. The image was captured from the Spitfires.com Airvan near Selsey Bill before the four fighters landed back at Solent Airport. DARREN HARBAR

OUT OF THIS WORLD

Even for astronaut Tim Peake, flying in a two-seat Spitfire with two other ‘Spits’ and a Hurricane for company, commemorating the Battle of Britain 85th anniversary, was an experience like no other

WORDS: BEN DUNNELL

The fortunate five: Matt Jones, Sqn Ldr Mark Sugden, Tim Peake, Flt Lt Andy Preece and Sqn Ldr Al Luckins. DARREN HARBAR

It's 19 September 2025, and the men occupying the two seats of a Spitfire IXT are enjoying the most glorious view, in formation with three other Second World War-era aeroplanes on a gin-clear day. Neither can quite believe his good fortune in being part of such an event, even if one of them is the best-known British astronaut and the other is among the leading figures in our warbird scene. Even for Tim Peake and his pilot Matt Jones, the chance to fly over Capel-le-Ferne's Battle of Britain Memorial to mark the 85th anniversary with two other Spitfires and a Hurricane, and from the Battle of Britain Memorial Flight to boot, made this no ordinary occasion.

As Matt says of the former Army Air Corps helicopter pilot and Boscombe Down rotary-wing test pilot, who spent 186 days aboard the International Space Station as part of the Principia mission in 2015-16, "Having seen the earth from space, he brings a different level of relevance to everything he comments on or partakes in". With a smile, he adds that their career paths might just have been different: "It's slightly irritating, because I actually applied for that astronaut job and didn't even get a letter back. It's a discussion I've had with him many times..."

No hard feelings, anyway. Matt is the managing director of Spitfires.com, home-based at Goodwood, not far from Tim's Chichester birthplace. "We've done a lot of stuff with Tim", he says. "He's about as passionate an aviator as there is. Being ex-military, he understands that side of it and the importance of remembrance. And he's got an amazing following, and a very relevant following. He was overjoyed to be asked, which I thought was very sweet, and moved quite a few things to make it happen. Tim is one of the nicest guys I've met in aviation — he's charming, interesting and interested."

He'd also flown with Matt before, for the previous big Battle of Britain anniversary. "It was for the 80th", says Tim. "*The One Show* came down and we had a whole day of filming, including with a couple of veterans. Afterwards we went for a flight, which was incredible". This one was to be even better.

The view from the back of Spitfire SM520 as the two-seater takes up the slot position for the flypasts behind P7350. TIM PEAKE

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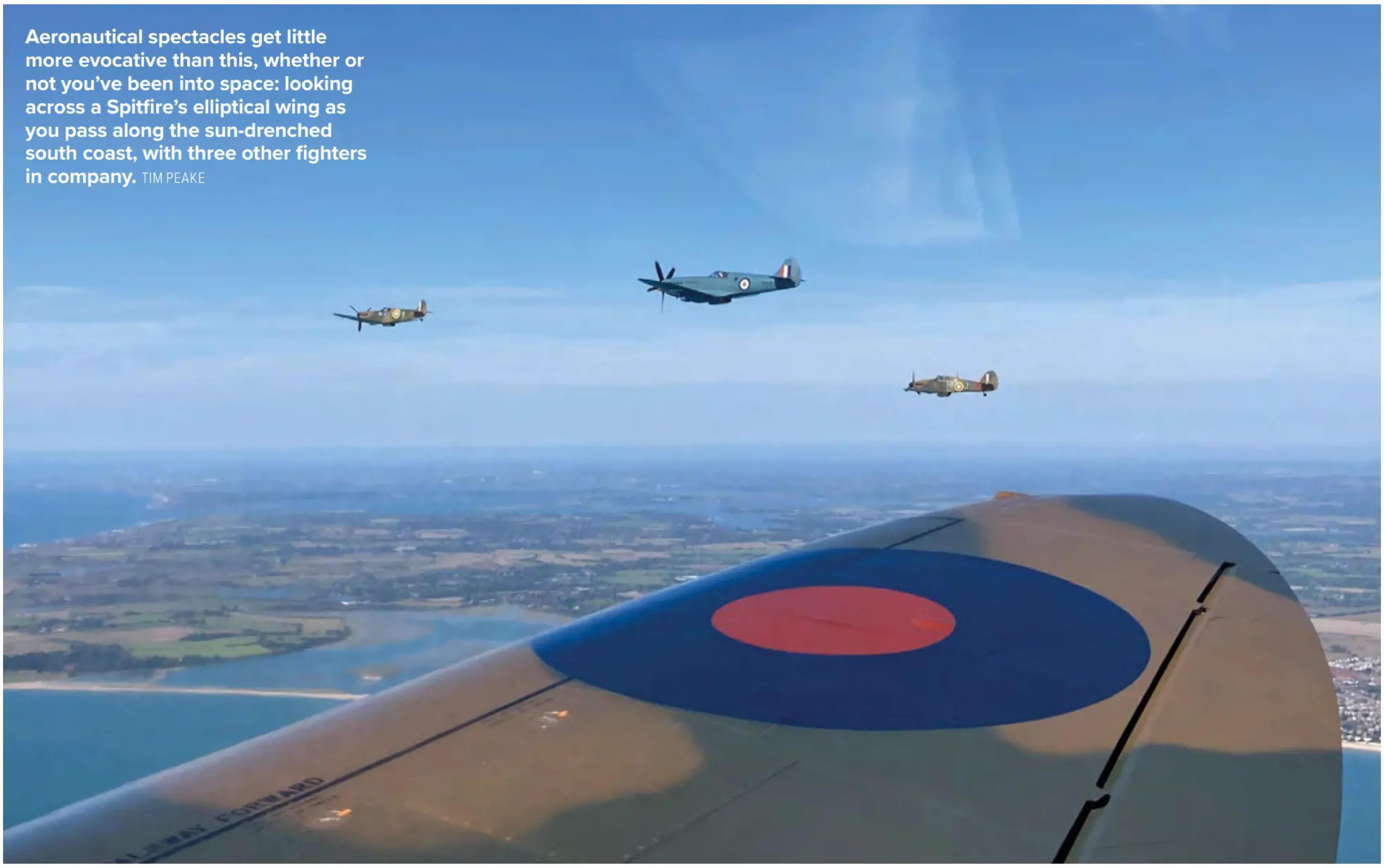
ACADEMY

> ***"Tim was overjoyed to be asked"***

How did it come about? Let Matt explain. "We have always had a relationship with BBMF, but we've developed a closer working relationship in the past 12-18 months. It's culminated in them using our Spitfire simulator for their Spitfire pilots at the start of every season to do emergencies training. As a result of that increasing relationship we were approached by Sqn Ldr Mark 'Suggs' Sugden [the flight's commanding officer] and Gp



Aeronautical spectacles get little more evocative than this, whether or not you've been into space: looking across a Spitfire's elliptical wing as you pass along the sun-drenched south coast, with three other fighters in company. TIM PEAKE

Capt Robbie Lees [commander of the Display Air Wing] on behalf of BBMF with the idea to do something special for Battle of Britain 85, using one of our two-seaters to put someone notable and relevant in to draw some attention to the day… We agreed immediately that it was a great idea and that we should do it, and we started to try and put the rest of it together. Again, BBMF's idea was to do it over the Battle of Britain Memorial site at Capel-le-Ferne, which made complete sense as well."

So did the choice of aircraft for Tim to fly in. When Spitfires.com's flagship MkIXT, SM520/G-ILDA, needed repainting, a Battle of Britain scheme was selected with a view to the upcoming 85th anniversary. It seemed obvious to pick an aeroplane based at Westhampnett, given that the former Fighter Command station became the Goodwood racing circuit and aerodrome. As covered in our July 2024 issue, G-ILDA thus depicts Spitfire I X4382 of No 602 Squadron, as flown on several occasions during the battle by Plt Off Nigel Rose. He continued to live locally, and visited the Boultbee Flight Academy, as Spitfires.com used to be known, regularly until his death in 2017 aged 99. "It seemed", says Matt, "like that was the right aeroplane of our two-seaters to use on the day."

Formation leader from the BBMF would be the only airworthy Spitfire which flew in the Battle of Britain, MkIIa P7350, presently marked as the No 54 Squadron mount of New Zealander Flt Lt Al Deere from 10 July-31 August 1940, R6895 *Kiwi III*. The other 'Spit' was Griffon-engined PRXIX PM631, one of the flight's founding airframes, while completing the quartet was Hurricane IIc LF363, its colours those of No 303 (Polish) Squadron's V6665 in September 1940. No such salute would, it goes without saying, be complete without a Hurricane, and especially in the year that saw the passing of the last of 'the Few', Gp Capt John 'Paddy' Hemingway, who flew the Hawker fighter with No 85 Squadron. He exemplifies the reason for such an event, as outlined by Mark Sugden: "They proved through resilience, determination, that the German war machine could be beaten. They were outnumbered but not outclassed. We must never forget their efforts and their bravery."

Come the lead-up, as Matt Jones reflects, flexibility was key. "Initially we planned to fly out of Goodwood, but because of the Revival event, because of the weather they'd had and the state of the runways, and because of the wind, it was decided we should use Lee-on-Solent instead. We were supposed to do it on Battle of Britain Day itself, 15 September, but we ended up doing it on the 19th because on the 15th it was gusting 45kt across the runway and none of us want to get airborne in Spitfires in that.

◆

"Anything in remembrance with these aircraft is extremely special, because the aircraft and the history are inextricably linked. It's a very privileged position we're in, to have any association with this. I always say to people, we are pilots who fly Spitfires — we are not Spitfire pilots, because Spitfire pilots flew in battle and we just go around complaining about how difficult they are to land rather than being shot at day in, day out. To be able to get close to the end of our season and pay our respects again was fantastic.

"It came with a few challenges… First of all, it was a display and we had a passenger on board as non-essential crew, so we had to get a dispensation from the CAA for that. The BBMF said we'd got to do a crowd-rear arrival, so we needed to speak to the CAA again, because civilians aren't allowed to do crowd-rear arrivals and particularly in warbirds. We looked at the risk assessment the BBMF uses and the CAA looked at it. They said that on this occasion, because of the site, because of the importance of the event and because they didn't think there was a risk at any part of the flightpath — so long as we were at a certain height — that if something went wrong anyone on the ground would be hurt,

Al Luckins, a No 41 Squadron Typhoon pilot in his day job, shows Tim Peake the Hurricane.
DARREN HARBAR

they were happy to give us the approval. That was two boxes ticked by the, as ever to us at least, very helpful CAA general aviation department.

“The third one, of course, was being approved to fly with BBMF at all. Just to be asked and to be trusted means a huge amount. They do it with quite a few people but they don’t do it with everyone, so we felt honoured that they were happy for us to do it. As I think I said to ‘Suggs’” — himself a previous Typhoon pilot — “after the day, the pilots we were flying with are doing the same job are doing the same job the people we are commemorating 85 years ago did; that is, jumping into aeroplanes and protecting the country. They are very highly trained and very talented.”

Since this was categorised as a display by the CAA, it required a flying display director. The role fell to the highly experienced Roger Steele of R5 Air Displays, who performs this role at myriad venues large and small. “He was superb”, says Matt. “Very forward-leaning and helpful. He understood the importance of it all as well. BBMF use him a lot and have a great relationship with him.”

With the weather playing ball and all those challenges met, what a great day unfolded. “We were there very early, five o’clock-ish”, Matt recalls. “We were airborne at 10.20 for an 11.00 — the eleventh hour — over-the-top time on target. On the way there and the way back we flew in a loose battle formation, and Tim did most of the flying. I did the take-off, the landing and the formation bits, and he did the rest, which he really enjoyed.”

He certainly did. It was quite late on when Tim received the request to participate, but he wasn’t about to pass it up. “I was in the thick of my speaking tour around the UK”, he says. “I knew I had a show on that evening, but the show was in Bournemouth, so I thought it was doable. I texted him straight back and said, ‘Matt, what time are we wheels-on?’ He said he could have me wheels-on at one o’clock, so I could make that work and be at Bournemouth for my evening show. You don’t turn an opportunity like that down.

“Last time it was so iconic for me to just go up in a Spitfire. It was a dream come true. But this time to go up as part of a fighter formation with three Spitfires and a Hurricane as well was a very unusual event, and it was a very special flight. We were up for nearly two hours, so it was a long one as well. Matt was very generous, and pretty much as soon as we were on our way he handed over, which was lovely, and I got plenty of stick time.

> ***“I think I was pinching myself every minute”***

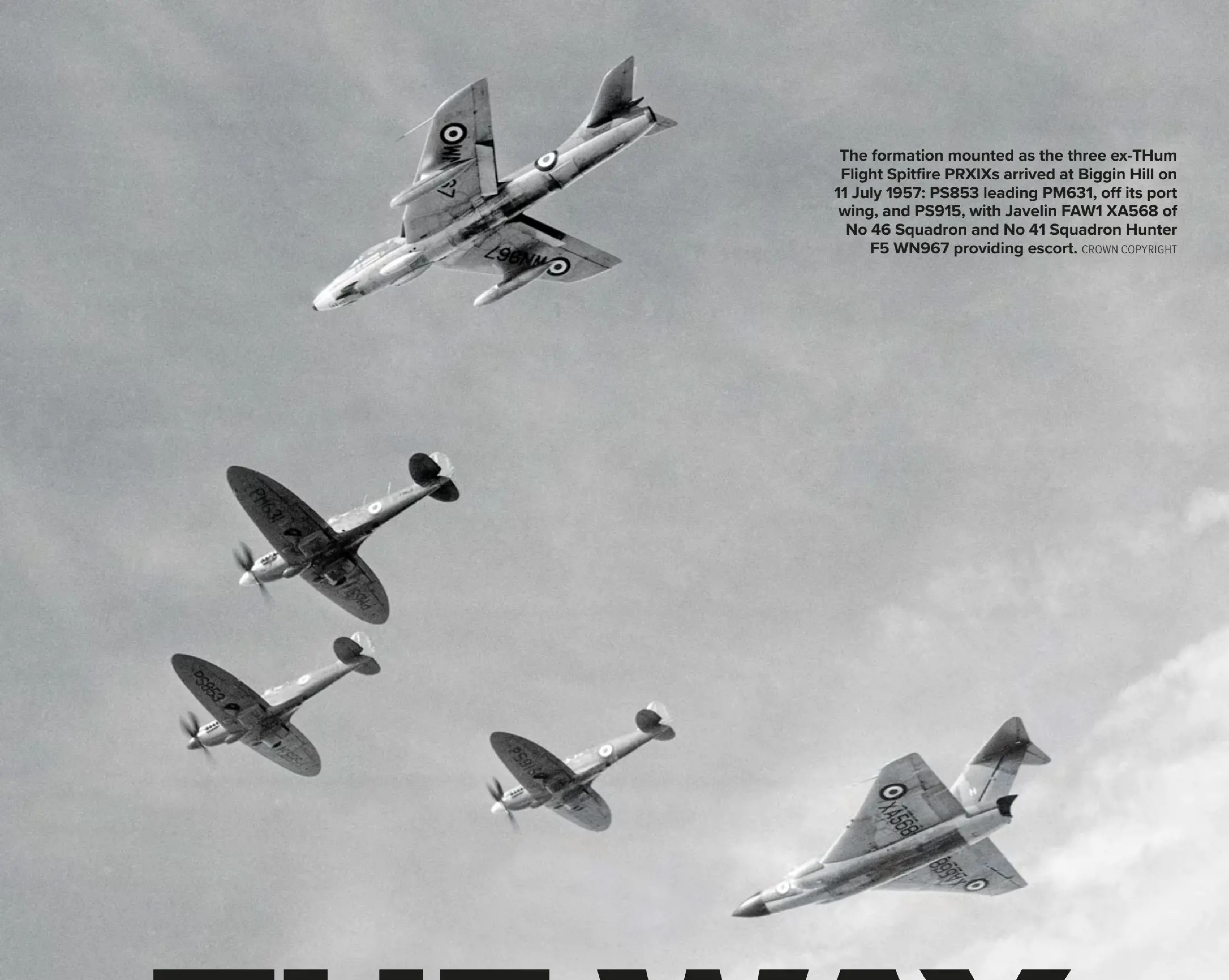
“For me there were so many exciting and memorable moments. Having flown a lot of helicopters, going fixed-wing flying is still a novelty. I’m now flying Cessna 172s from Goodwood, so I’m doing more fixed-wing than I ever have done, but flying fixed-wing in formation is not something I’ve done a huge amount of. I did plenty of helicopter formation flying, but fixed-wing is very different in terms of how you approach it.

“Meeting up at Lee-on-Solent in the morning, getting to chat to the other crews and seeing how they go about their briefing was fascinating. I had the opportunity to fly with the Red Arrows at RIAT a few years ago, and as much as I love the flying, of course, I actually find the briefings interesting as well… But the moment where the hairs stood up on the back of my neck was when we all started engines. That’s when you imagine what it would have been like in a scramble in the Battle of Britain, with multiple Merlins firing up… we had the luxury of a calm, organised brief, a great pre-flight, a chat, a strap-in and it was all very measured, but it made you think what it was like for the young pilots, some of them not far out of their teenage years, starting up their engines in a far less organised manner and scrambling down the runway to go up into the skies.

“We were the last one off, so we had to get into formation with them. Matt pulled a nice amount of g as we did a tight turn, headed out over the Solent and formated. The weather was amazing, there were plenty of people down at the memorial — we were able to see that as we flew over — and when we got back we had so many reports from people who had seen us on the way off the south coast, saying what a great sight it was to see. I think I was pinching myself every minute, to think that not only was I doing some fantastic fixed-wing formation flying but I was formating against Spitfires and a Hurricane. It was quite magical.

“It’s all about keeping people’s memories alive, and making us appreciate their sacrifices. Although we all talk about the pilots involved, I’m also very aware of everything involved in keeping their aircraft flying. Some of my favourite books have been *Spitfire: A Test Pilot’s Story* by Jeffrey Quill and Alex Henshaw’s *Sigh for a Merlin*, and when you read them you realise the massive effort that was going on in the factories, by the delivery crews — men and women all around the country trying to make sure we had the right resources in place, the right aircraft in place.

“For me personally it was an incredible occasion, but that pales into insignificance when you think […] what we were there for, which was to pay tribute to the sacrifice so many people made during that summer. As somebody who’s been passionate about flying all my life, and passionate about aviation, I’m very aware we do stand on the shoulders of those giants, and to be able to commemorate that was the most special thing possible.”



The formation mounted as the three ex-THum Flight Spitfire PRXIXs arrived at Biggin Hill on 11 July 1957: PS853 leading PM631, off its port wing, and PS915, with Javelin FAW1 XA568 of No 46 Squadron and No 41 Squadron Hunter F5 WN967 providing escort. CROWN COPYRIGHT

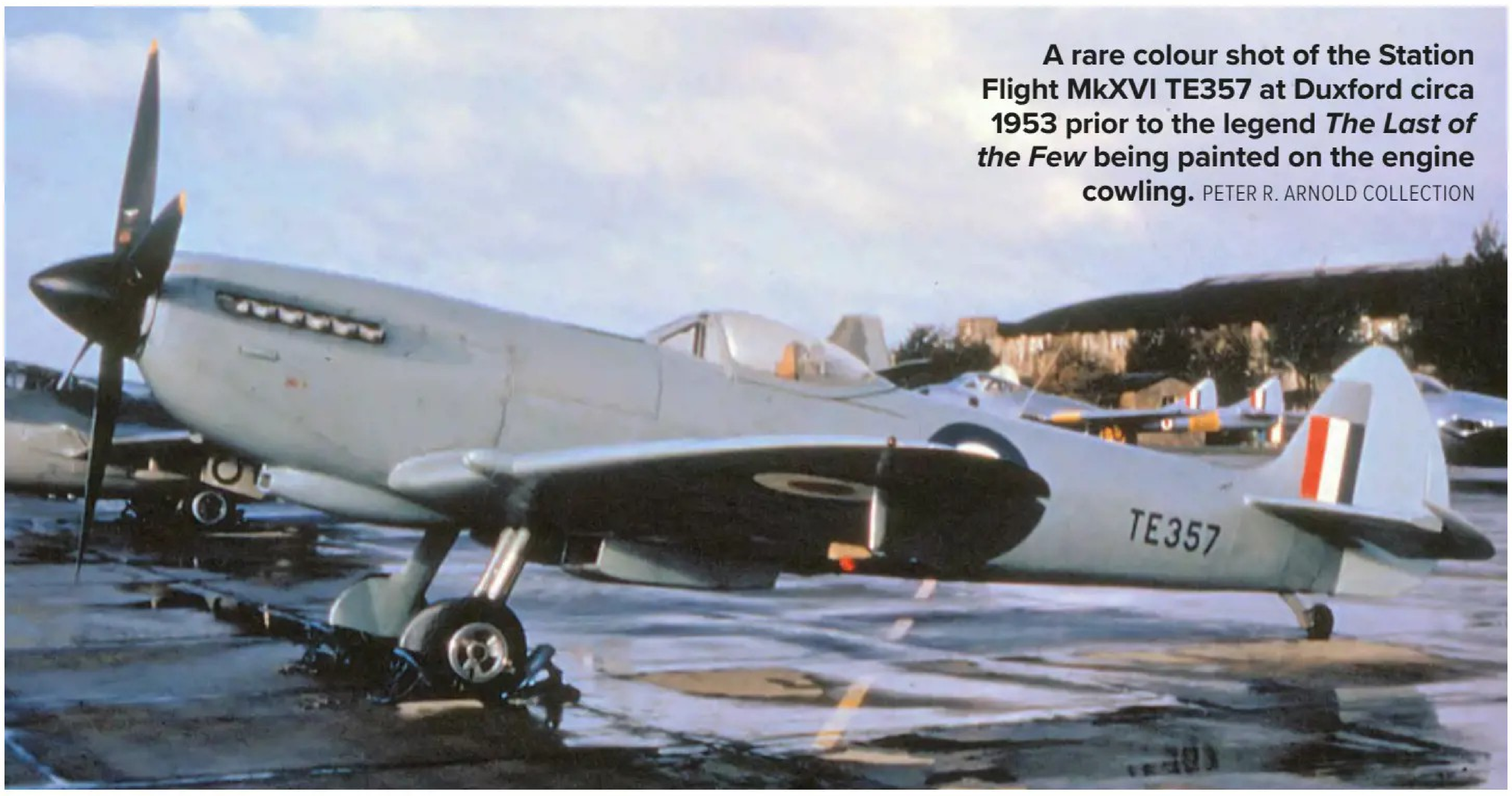
THE WAY WE WERE

Today's Battle of Britain Memorial Flight was not the product of a moment. When the RAF started regularly commemorating the battle in the 1950s, it still had in-service Spitfires to call on, albeit in dwindling numbers. As the world's leading 'Spit' historian describes in his final feature for us, the establishment of a dedicated historic flight stemmed from those aeroplanes — in fits and starts

WORDS: PETER R. ARNOLD

After resolution of substantial issues with the Griffon engine, the recent return to flight of the Battle of Britain Memorial Flight's longest-standing Spitfire, PRXIX PM631, has seen it being repainted in the precise markings it wore when received in July 1957. That means PRU blue overall with a yellow spinner and the RAF serial, both on the fuselage and underwing, applied using a curious number 6 in a non-standard font.

Over the decade following the end of World War Two in 1945, the Spitfire transitioned from being a front-line fighter with mainstream operational squadrons through to equipping Royal Auxiliary Air Force and finally second-line units such as the Flight Refresher School, Central Gunnery School, Control and Reporting School, Land Air Warfare School and Central Flying School. The Fighter Command Communication Squadron assigned a number of Spitfires to be the personal aircraft of very senior RAF officers, while the last major users were the five Civilian Anti-Aircraft Co-operation Units, flying MkXVIs up to 1956. This accounts for why the *Reach for the Sky* film of 1955, like *Malta Story* before it, used inappropriate low-back MkXVIs for the aerial footage.

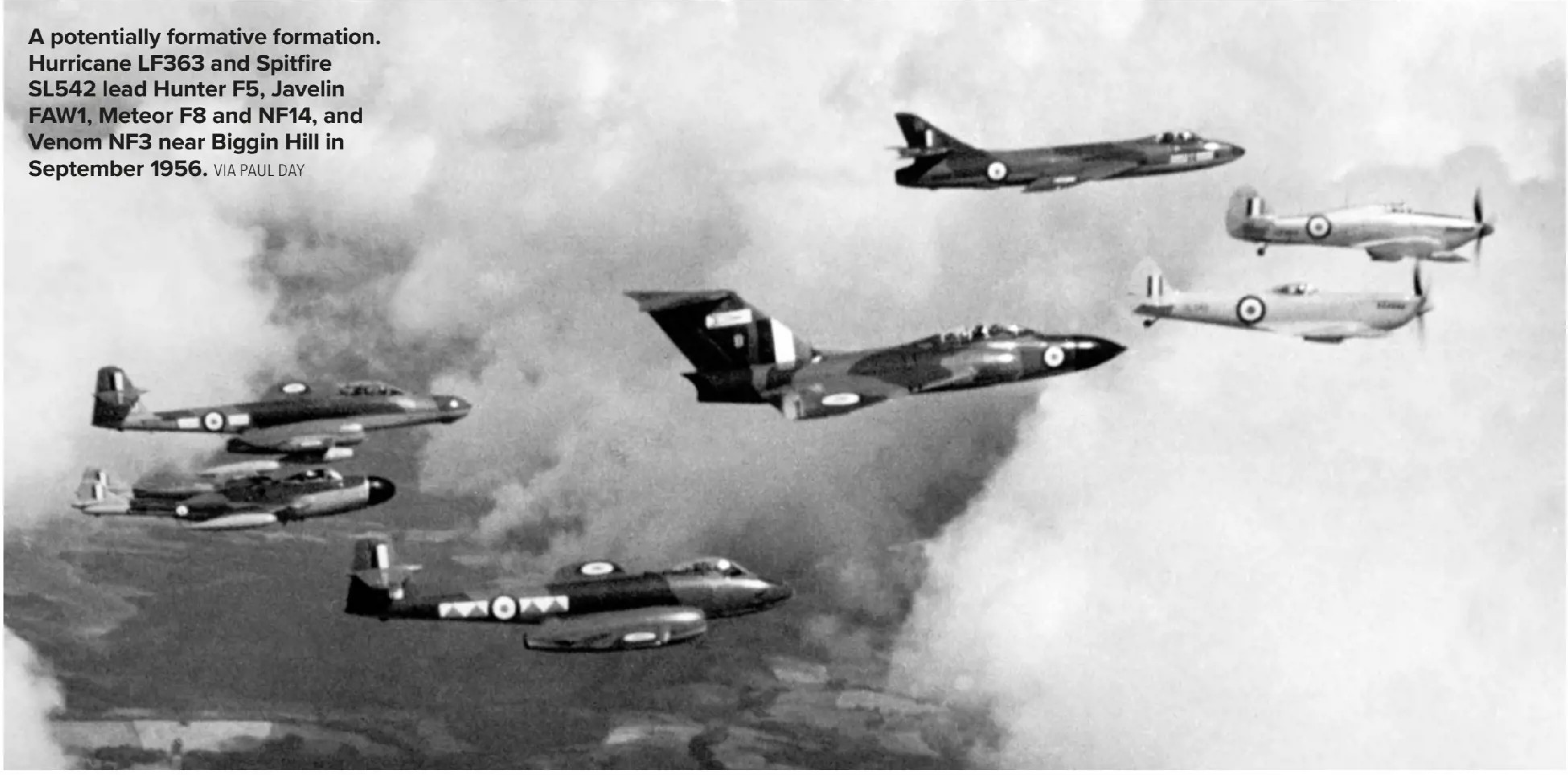


A rare colour shot of the Station Flight MkXVI TE357 at Duxford circa 1953 prior to the legend *The Last of the Few* being painted on the engine cowling. PETER R. ARNOLD COLLECTION

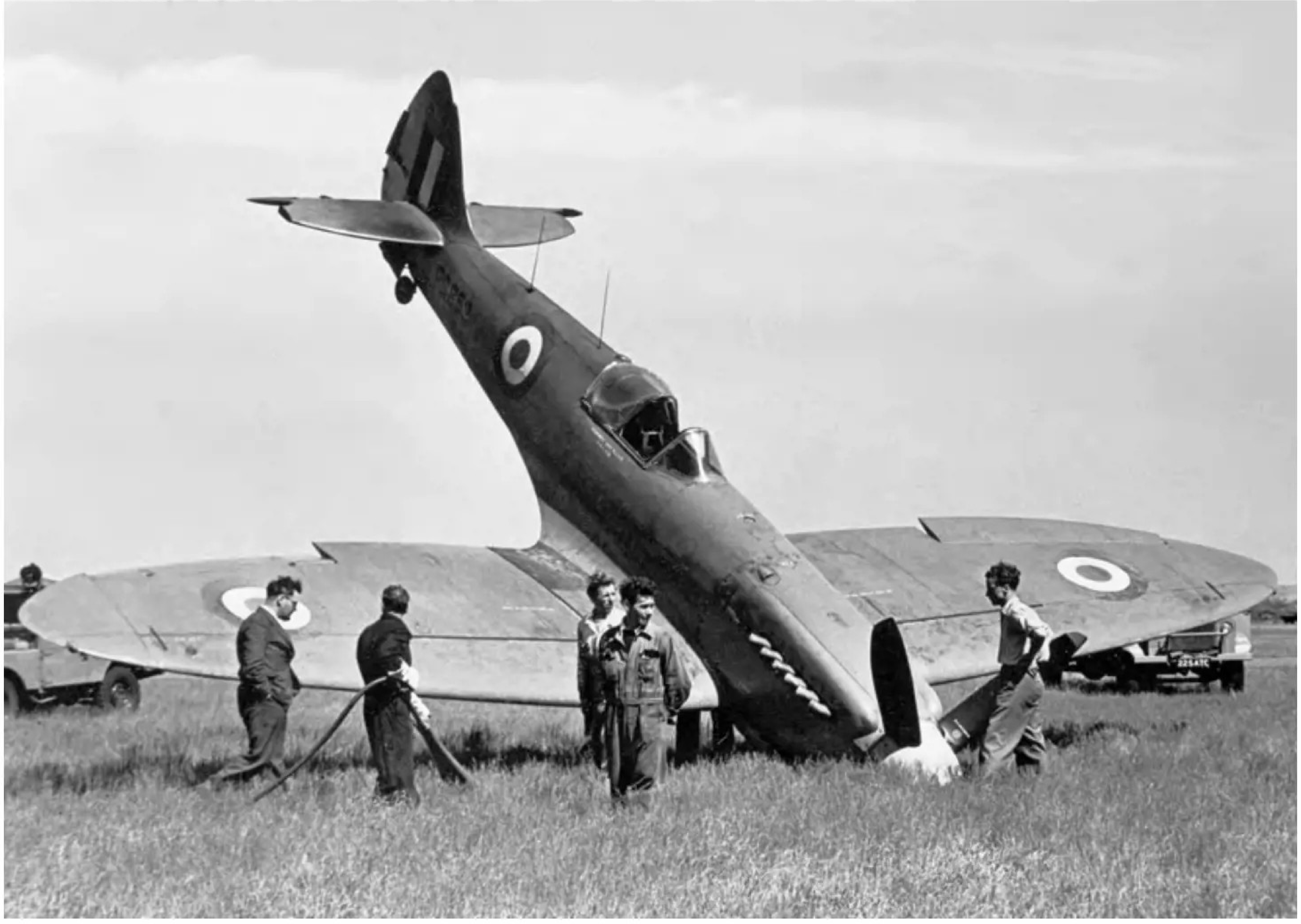
Some station flights were allotted a Spitfire and latterly that at Duxford maintained a MkXVI, TE357, painted all-over light grey with the legend *The Last of the Few* inscribed on the engine cowling. Together with the Biggin Hill Station Flight's Hurricane IIc, LF363, it represented the RAF at airshows in the 1954-55 period. At this time the only other flying Spitfires in the UK were the Temperature and Humidity (THum) Flight PRXIXs and the civilian-owned and operated MkXIV RM689/G-ALGT of Rolls-Royce, MkVIII Trainer MT818/G-AIDN of the Hampshire Aero Club and MkV AB910/G-AISU belonging to Vickers-Armstrongs.

> *“Where could the flight get a Spitfire?”*

As a flight commander with No 64 Squadron, Flt Lt 'Reggie' Spiers made TE357's last trip at Duxford on 6 December 1954. That day there had been a queue waiting to fly the Spitfire, possibly the final chance most of the then-serving RAF fighter pilots would have. Immediately after take-off the very experienced Spiers noted the aileron response was heavy and something was not quite right. He alighted on the grass 20 minutes later, making a heavy landing and puncturing a tyre, thought to have been caused by a jagged edge on the pierced steel planking. The aircraft was immediately towed back to the hangar. The next day Spiers was advised by the engineering officer that it should not have been flown. Some metal

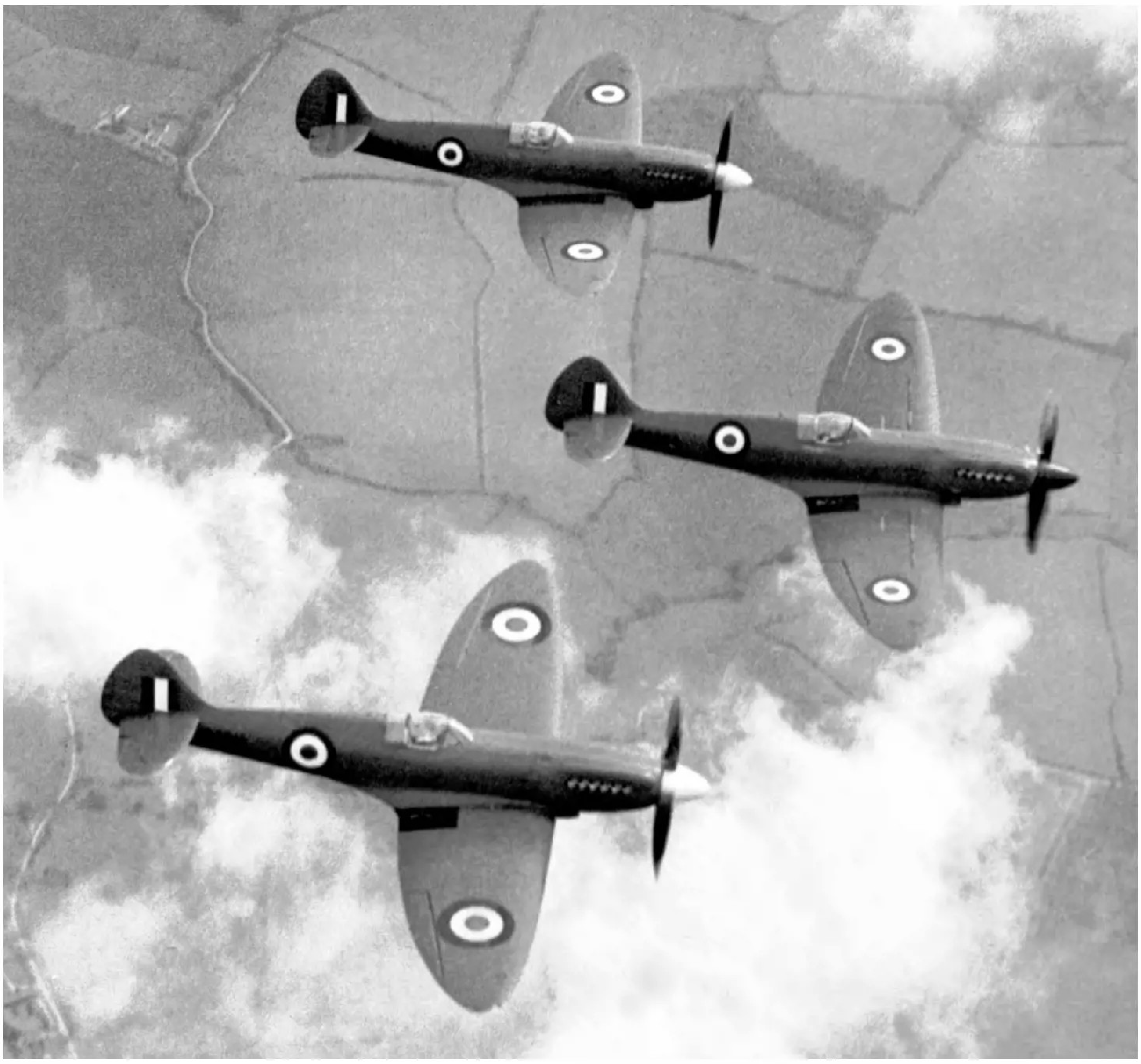


A potentially formative formation. Hurricane LF363 and Spitfire SL542 lead Hunter F5, Javelin FAW1, Meteor F8 and NF14, and Venom NF3 near Biggin Hill in September 1956. VIA PAUL DAY



ABOVE: Reluctant to leave Woodvale on 12 June 1957, PS853 nosed over, requiring a replacement prop and spinner before it departed for Duxford. PETER R. ARNOLD COLLECTION

BELOW: The three Spitfire PRXIXs on 11 July 1957. PS853 with its replacement black spinner leads, with PS915 to starboard and PM631 to port. CROWN COPYRIGHT VIA PETER R. ARNOLD COLLECTION



distress was pointed out in the footwell spar area. This could well account for why there is no accident card, the Spitfire being quietly scrapped. TE357 was noted at Duxford fully stripped-down and reduced to produce on 14 September 1957.

Ceremonial and display duties were passed to MkXVI SL542 for the 1955 season, the Spitfire being secured by the Duxford Station Flight from No 2 CAACU on 1 April. Painted overall light blue it was noted attending 'At Home' Days at Duxford and Biggin Hill where in September 1956 it headed a formation of a Hurricane, Hunter, Javelin, two Meteors and a Venom. The BBMF's former CO, the late Sqn Ldr Paul Day, considered that this was when thoughts of forming an historic flight began to germinate. On 31 January 1957, however, SL542 suffered a category 3R accident at Duxford, ground-looping after a landing by Fg Off Des Melaniphy of No 65 Squadron and terminating its flying career. And then there were three…

❖

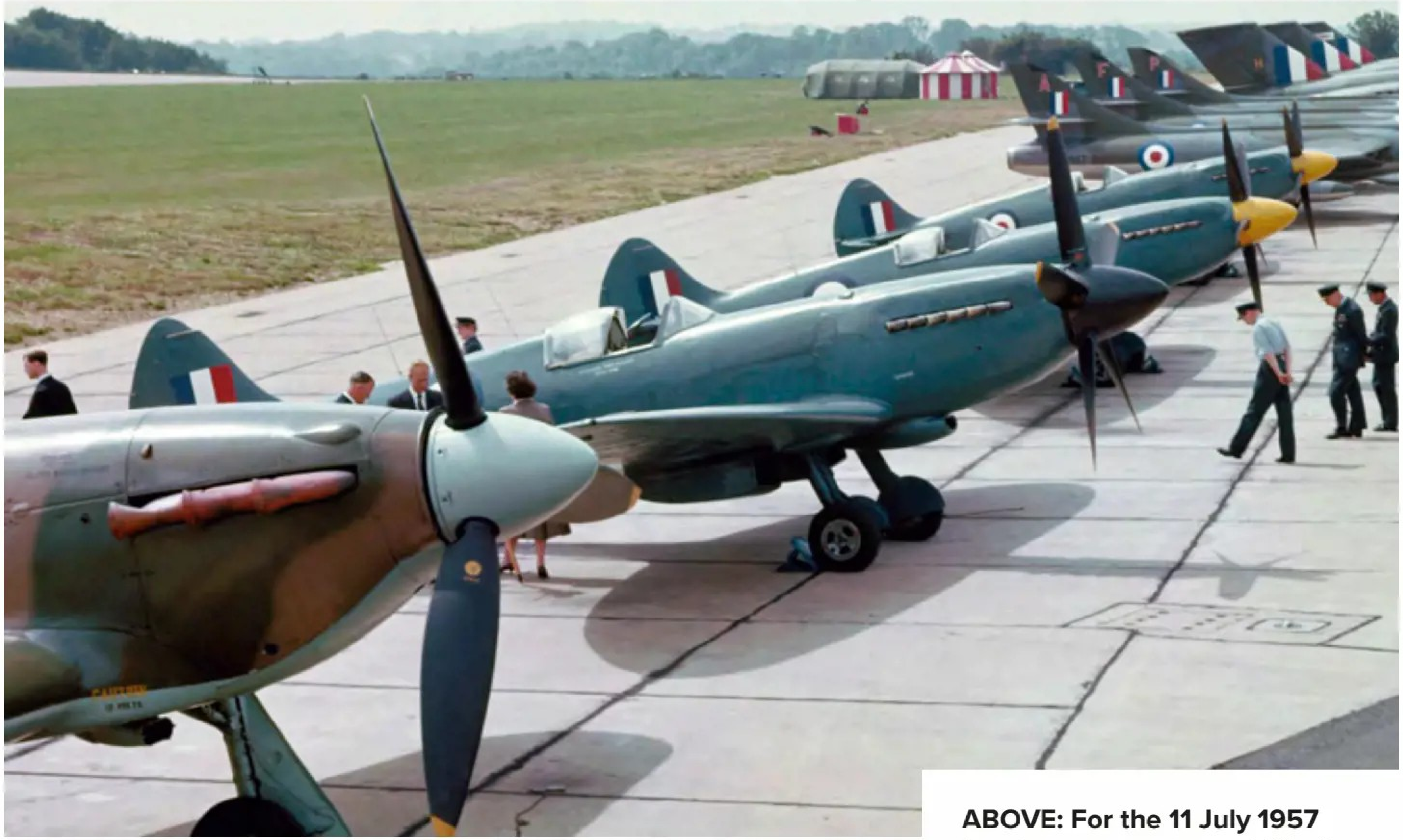
In 1956 Wg Cdr Peter Thompson, the station commander at Biggin Hill, initiated the overhaul of the dilapidated Station Flight Hurricane, LF363. This was undertaken gratis by Hawker at Langley and the seeds of an RAF historic flight had been sown, but where to get a Spitfire? The THum Flight was still active at Woodvale, using Spitfire PRXIXs that would shortly be replaced by Mosquito TT35s. Operated for the RAF by Short Brothers and Harland, it gathered up-to-date reports for the Meteorological Office on such phenomena as clouds, visibility, turbulence, haze, inversions, ice formation and other weather conditions, flights going as high as 30,000ft. Following the last operational THum Spitfire sortie on 15 June 1957 the remaining three MkXIXs, PM631, PS853 and PS915, were to be made available to the Biggin Hill flight.

It is reported they were a touch reluctant to undertake the move. At a major SSAFA air display there on 12 June to mark the departure of the Spitfires and introduce the Mosquitos, PS915 refused to start, PM631 did one circuit and landed with radio problems, while PS853 suffered engine issues and failed to take off, nosing over and smashing its propeller and damaging the spinner.

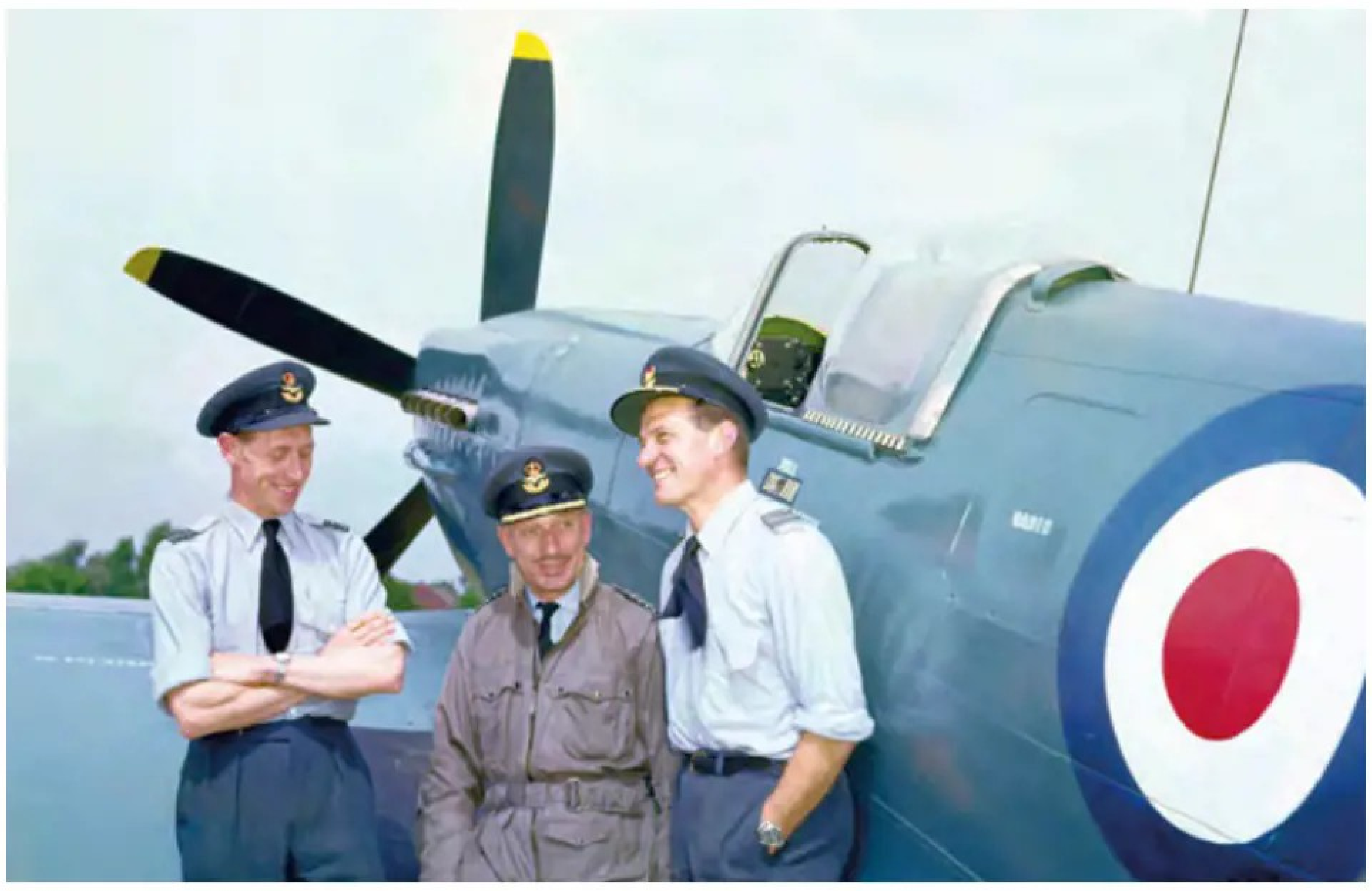
Two of the three Spitfires flew out to Duxford the next day, the third following later, this presumably being PS853 once repairs had been made. Preparations were made for a grand arrival at Biggin Hill, planned for 17 June but rescheduled for 11 July with full media and air-to-air coverage for the press and a formal hand-over in the presence of the Air Officer Commanding-in-Chief Fighter Command, Air Marshal Sir Thomas Pike. Piloting them were Thompson in PS915, Gp Capt James Rankin in PM631 and Gp Capt 'Johnnie' Johnson in PS853. The historic flight — not a formal title at this juncture — was thus formed on the basis of a minimal budget and volunteer manpower, and with three photo-reconnaissance Griffon-engined Spitfires it could hardly be named after the Battle of Britain at this stage.

> ***"The flight had a minimal budget"***

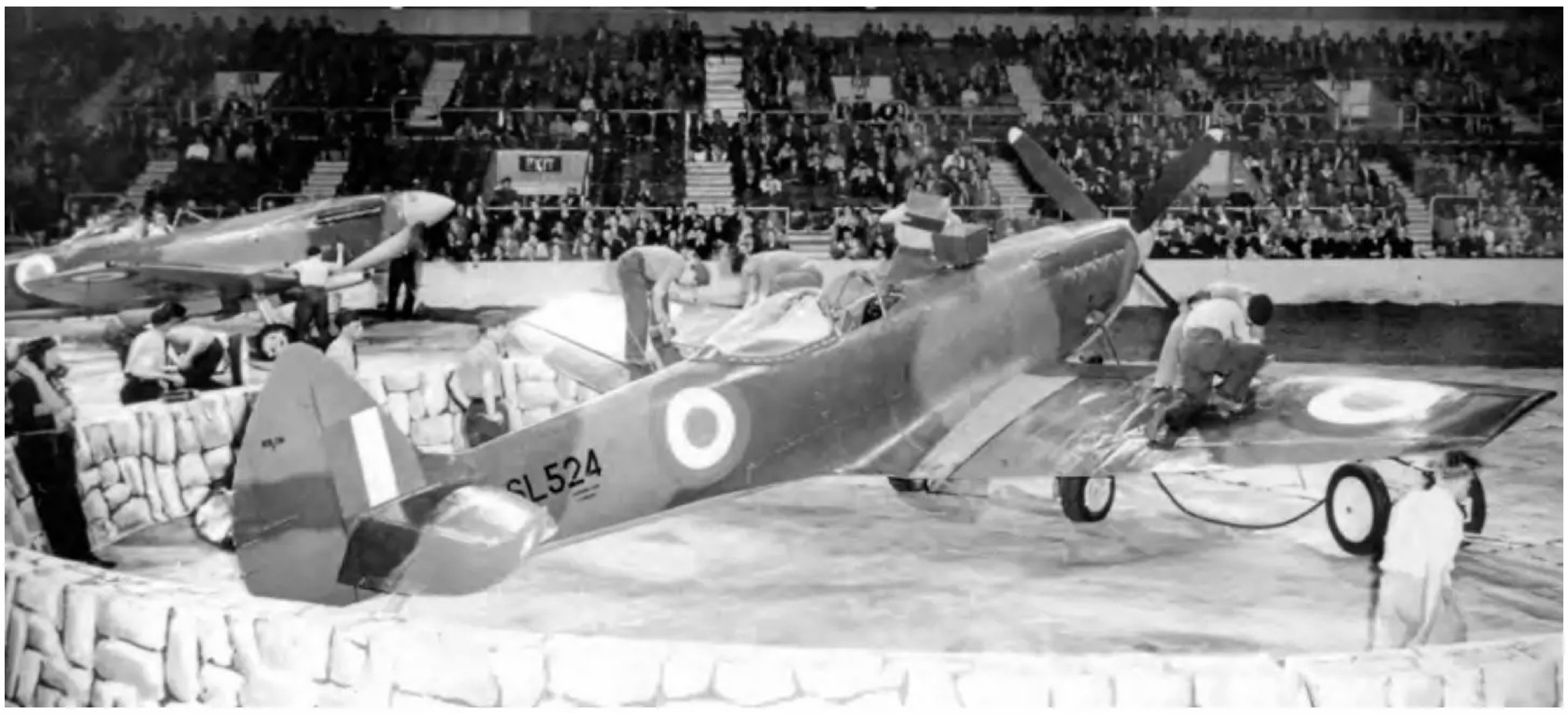
With perfect timing the Royal Tournament at Earls Court in June 1957 featured a 'Siege of Malta' display involving three non-flying MkXVIs: TE330, which was fired up, TE476 and SL574, painted with the incorrect serial 'SL524'. Having seen them there Peter Thompson made immediate representations to acquire all three for the flight. This was successful and he sent the Biggin Hill engineering officer to bring the best, TE330, up to full airworthy status. Originally it had been scheduled to become the gate guard at West Malling after the Royal Tournament, but this was rescinded. The lesser of the three PRXIXs, PS915, was substituted and flown to the Kent station on 8 August.



ABOVE: For the 11 July 1957 hand-over ceremony at Biggin Hill, the trio of PRXIXs were lined up between Hurricane LF363 and several home-based Hunters and Javelins. IWM



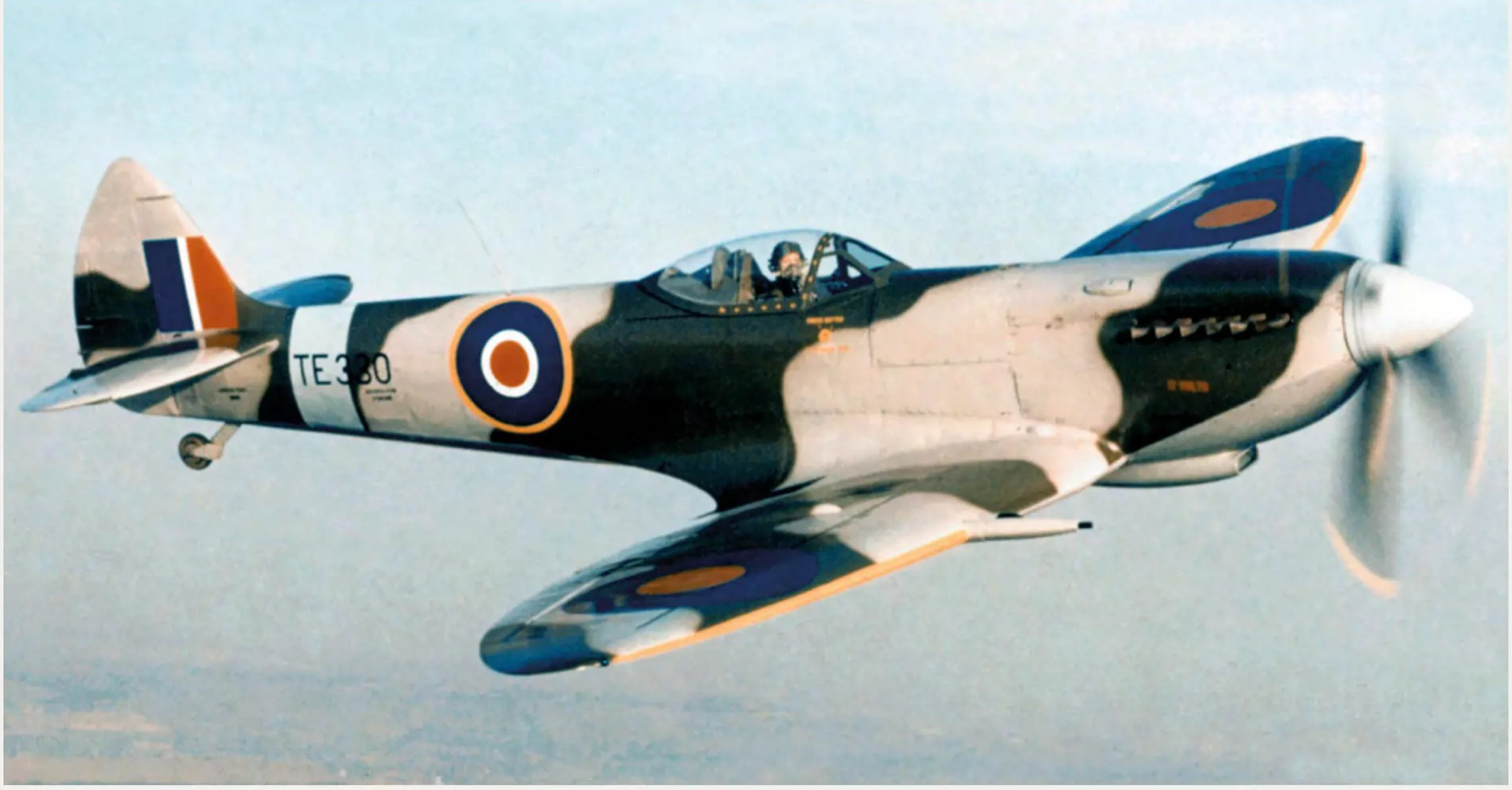
LEFT: Standing by the freshly liveried PS853, the pilots of the PRXIXs when they were delivered to the new historic flight: from left to right, Wg Cdr Peter Thompson, Gp Capt James Rankin and Gp Capt 'Johnnie' Johnson. IWM



BELOW: Two of the three MkXVIs at the Royal Tournament at Earls Court in July 1957 to re-create the siege of Malta. SL574 has been incorrectly painted with the serial 'SL524'. RON CRANHAM

TE330 was air-tested by 8 September, this being followed by four further air tests and practice flights. It culminated in the Battle of Britain flypast over central London on 15 September, the MkXVI being in the hands of the flight CO. This represented the first Battle of Britain Day tribute to see its involvement as a more-or-less formally established entity, although that process would remain ongoing for some while to come — not until February 1958 did the Battle of Britain Flight title enter use. As such, it was the forerunner of all the commemorative activity today's BBMF undertakes, of which this year's 85th anniversary salute over the Capel-le-Ferne memorial was another shining example.

ONE THAT GOT AWAY



Having been repainted for the Royal Tournament, TE330 was painted as here post-September 1957 for historic flight service, and yet again for handing-over to the US Air Force Academy in July 1958 — three times in less than a year, and all surprisingly inaccurate by today's standards.
CROWN COPYRIGHT VIA PETER R. ARNOLD COLLECTION

When the three Spitfire XVIs were taken on charge for display purposes in 1957, there was, a Fighter Command signal from the time shows, the idea of exchanging them outright for the PRXIXs. That — thankfully, given subsequent events — did not come to pass. But the Griffon-engined photo-reconnaissance aircraft were obviously viewed as more expendable than their Merlin-powered counterparts, hence the rapid retirement of PS915 to West Malling, and the near-divestment of PS853.

The latter occurred when the US Air Force Academy at Colorado Springs was promised a Spitfire from the RAF for static exhibition purposes. PS853 was the airframe earmarked, and Biggin Hill station commander Peter Thompson undertook to "make every effort to ensure that the aircraft is in a condition suitable for such an occasion". What's more, the idea was to fly it over. "PS853 is a fully serviceable aircraft", wrote Thompson. "It is suggested that delivery should be made by air rather than in a packing case as the latter method will rob the event of a great deal of its dignity."

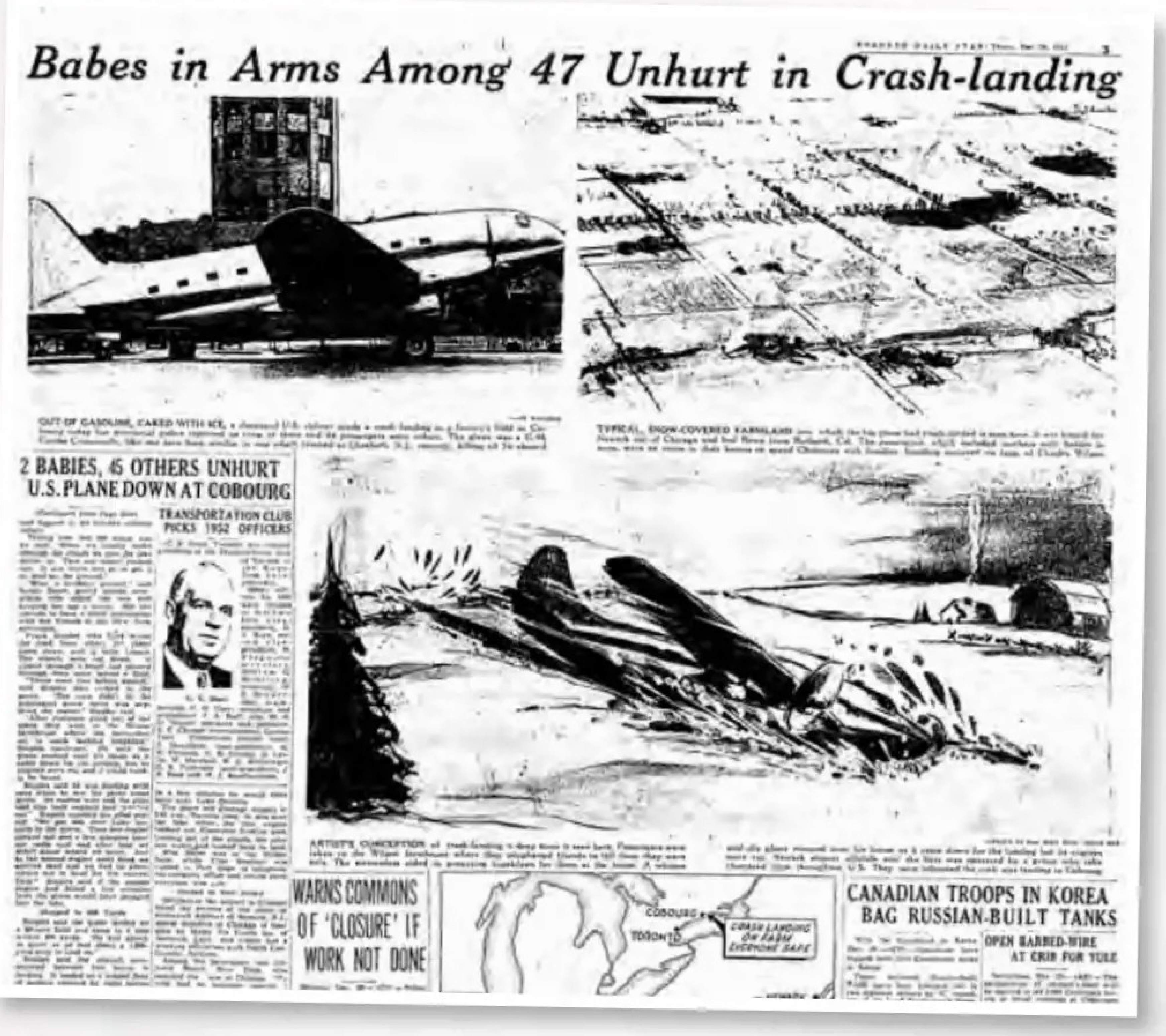
He even went so far as to suggest a route for the unprecedented trans-Atlantic flight. The mark, he said, had a maximum range of approximately 1,350nm with a drop tank if "flying for range". Therefore, Thompson proposed stages from Prestwick to Keflavík, Iceland, totalling 746nm; Keflavík to Sondrestrom, Greenland, of 722nm; and Sondrestrom to Goose Bay, Canada, at 905nm. Transport Command's Ferry Wing used all three airfields, and what was more, Thompson noted that newly retired RAF Lockheed Neptunes were currently being ferried back to the US by Transport Command crews. "These aircraft have a complete range of navigational equipment", he stated, "and the Spitfire need only formate on its 'big brother'."

Sounds almost the work of a moment, especially when Thompson added that the endurance of the Neptunes was sufficient for cover to be provided "in the unlikely event of the pilot of the Spitfire having to ditch" until an air-sea rescue aircraft could arrive. He suggested starting the flight no later than 20 November 1957 to make the most of longer daylight hours. But Fighter Command headquarters respectfully disagreed. "After due consideration of all the factors involved in your proposal", the marvellously named Gp Capt Tristram Barnard de la Poer Beresford wrote to Thompson, "it has been decided that the Spitfire must be delivered to the United States by surface means."

And by the end of November it wasn't to involve PS853 at all. Instead, TE330 was to head Stateside, official presentation being made during a ceremony at Odiham on 2 July 1958. A USAF C-124 Globemaster II provided transport. From Colorado Springs it went to the US Air Force Museum at Wright-Patterson AFB in 1961, only to be disposed of during 1997. New Zealand was its destination, initially in the ownership of James Slade, who placed TE330 with Don Subritzky at Dairy Flat for restoration. A couple of years later the Subritzky family acquired the Spitfire, but it was never to fly again before the fighter went to its most unlikely destination yet: the China Aviation Museum in Datangshan, in the north of Beijing. There it's exhibited in a cavern hangar, a far-flung reminder of the earliest days of today's BBMF. ***Ben Dunnell***

THIS ISN'T NEWARK!

"Where they went, how far they wandered in the sky no one knows. But the crew kept it from the passengers until the port engine failed, then they sent the stewardess, her face white but firm to tell the passengers the grim news". The words of the 27 December 1951 *Cobourg Sentinel-Star*, a week after a Curtiss C-46E of Robin Airlines experienced engine failure due to fuel starvation and force-landed in rural Ontario. Passengers and crew were shocked to find themselves 300 miles from their destination and in a foreign country — but at least they all escaped **WORDS:** ROBERT S. GRANT



Babes in Arms Among 47 Unhurt in Crash-landing

2 BABIES, 45 OTHERS UNHURT
U.S. PLANE DOWN AT COBOURG

TRANSPORTATION CLUB PICKS 1952 OFFICERS

WARNS COMMONS OF 'CLOSURE' IF WORK NOT DONE

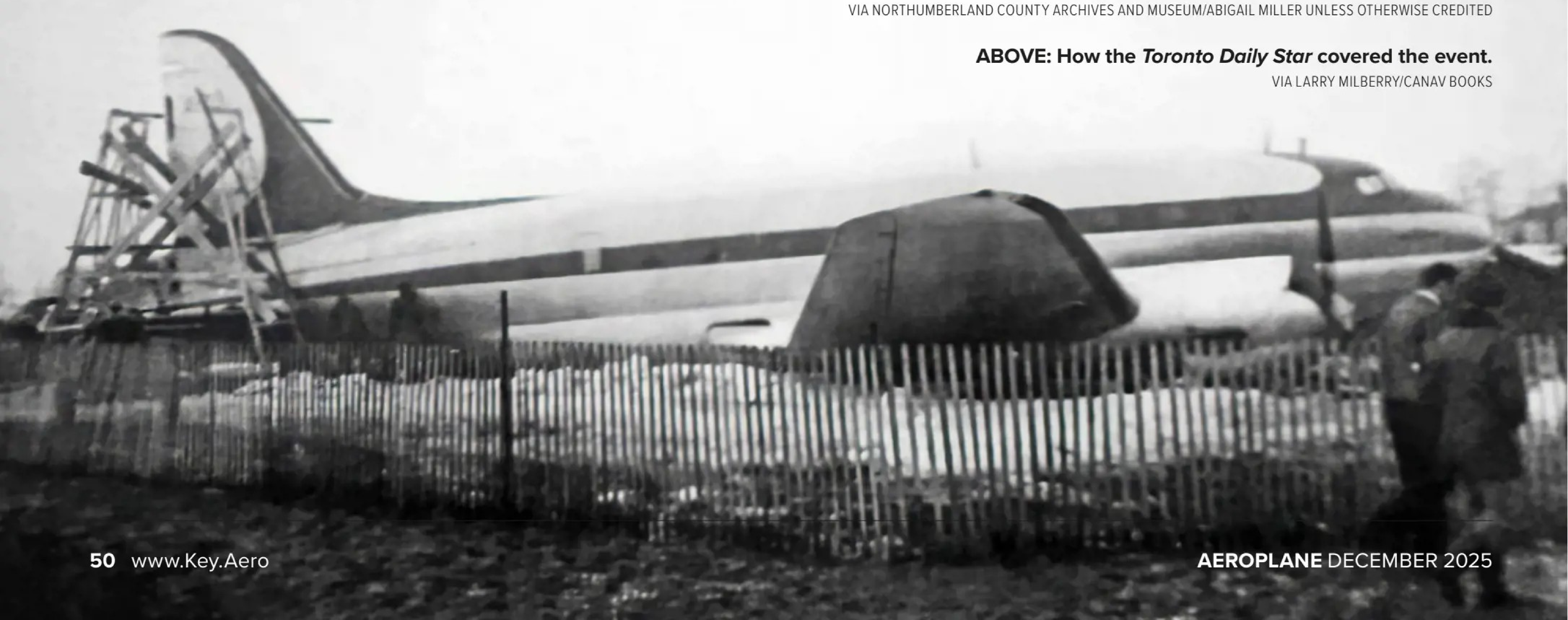
CANADIAN TROOPS IN KOREA BAG RUSSIAN-BUILT TANKS

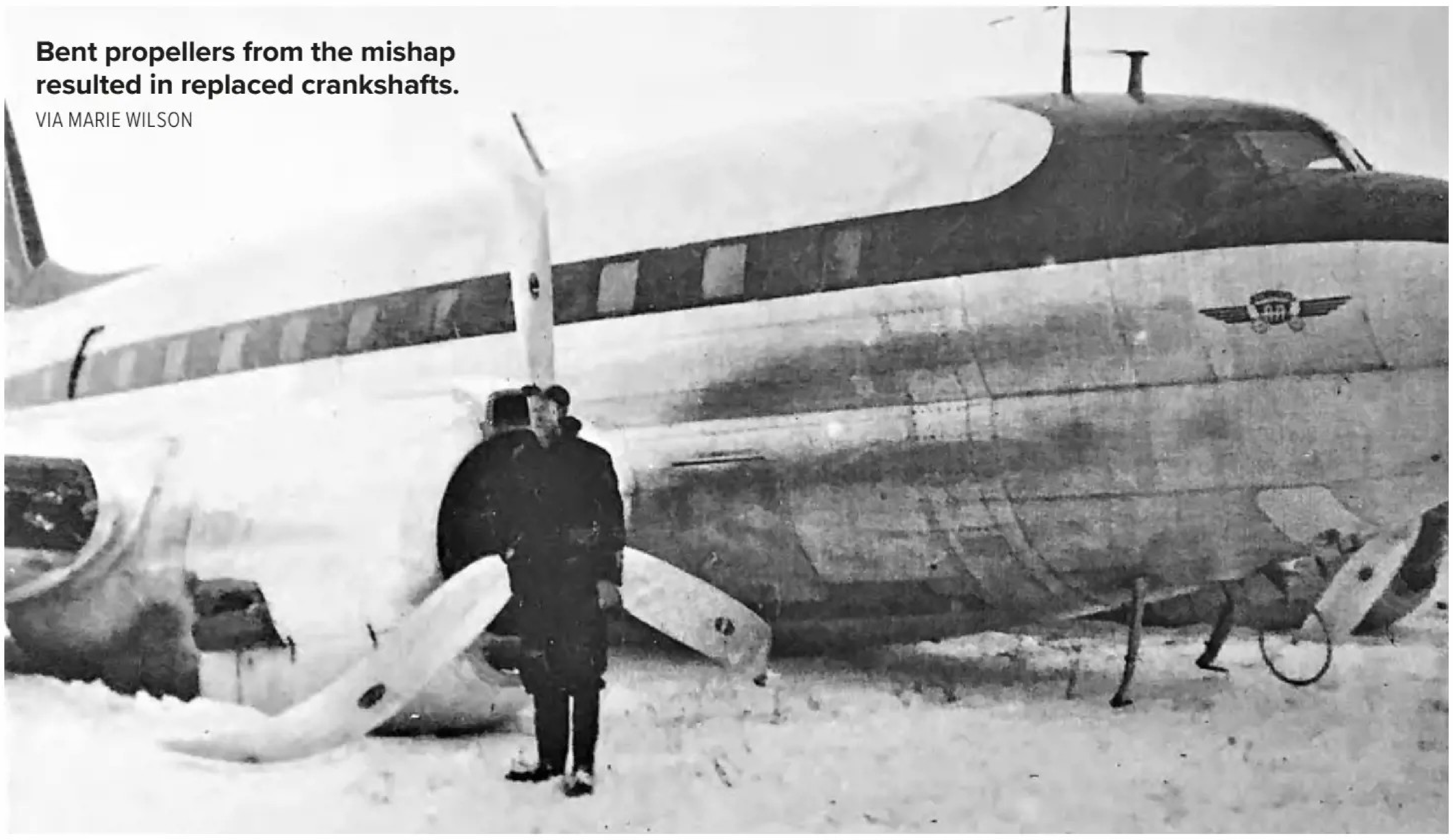
OPEN BARBED-WIRE AT CRIB FOR YULE

COBOURG
TORONTO
CRASH LANDING ON FARM EVERYONE SAFE

MAIN: C-46E N59487 on its belly at its temporary resting place.
VIA NORTHUMBERLAND COUNTY ARCHIVES AND MUSEUM/ABIGAIL MILLER UNLESS OTHERWISE CREDITED

ABOVE: How the *Toronto Daily Star* covered the event.
VIA LARRY MILBERRY/CANAV BOOKS





Bent propellers from the mishap resulted in replaced crankshafts. VIA MARIE WILSON

In a hiss of hydraulics and squealing brakes, Robin Airlines Curtiss C-46E N59487 rumbled forward on 19 December 1951 as passengers sensed the 18-cylinder radial engines pulsing maximum power. Exhaust blasted backwards from four shuddering steel stacks and, 21 seconds later, the sleek silver-and-black airliner lifted away from Burbank, California's asphalt runway. Expecting to terminate a four-state odyssey at Newark Metropolitan Airport via Chicago, none of the 48 passengers and crew knew their shoulders would soon feel the sting of Canadian cold. After 31 minutes aloft, an un-co-operative heater forced N59487 into Palmdale for repairs, 27 miles north of Burbank. After nine frustrating hours without heat or food, the paying customers continued to Albuquerque, New Mexico.

One of 17 C-46E-I-CS versions with a stepped nose, the Curtiss-Wright Airplane Division in St Louis claimed a 151kt cruise and 24,500ft ceiling. The standard fuel system consisted of six tanks but leakage in N59487 necessitated the removal of two cells. Instead of 1,383 US gallons, Robin Airlines' flagship held 782 US gallons of 100/130-octane. Pilots planned a conservative 180 US gallons per hour for the 2,200hp Pratt & Whitney R-2800-75 engines.

After Albuquerque, N59487 (c/n 2934) tracked to Kansas City where 10,000-hour Capt Bruce L. Smelser and first officer Edgar T. O'Leary took command. Stewardess Sandy Daine refreshed the cabin while pilots recorded the weather from Kansas City to Chicago Midway Airport.

At take-off, the aircraft weighed 43,283lb instead of the allowable 48,000lb. Airframe hours totalled 15,705 since the roll-out of US Army Air Forces serial 43-47408 on 13 July 1945. During cruise, the cockpit crew ensured cylinder head temperatures never exceeded 260°C and oil temperatures steadied below 93°C with the cowl flaps closed. The instruments functioned well and the coffee-maker fulfilled its purpose, although Californians did not appreciate another in-flight heater breakdown. They had paid $88 for the journey and their 2,300-cubic foot cavern was not warm.

Time passed comfortably for Smelser and O'Leary until weather below limits forced a flight plan change. Instead of a simple visual approach into Chicago, they concluded a monitored ground-controlled approach and anticipated an 02.15hrs departure for Newark. Before engine start, Daine negotiated the C-46E's upward slope with drinks for sleepy riders. Fuel on board could last four hours 25 minutes — if all went well.

Smelser and O'Leary flight-planned a three-hour 30-minute leg to New Jersey averaging 196kt in instrument flight conditions. Cleared to runway 13R, he expected an immediate take-off but the controllers stopped him with an order to hold for a non-radio aircraft. To prevent spark plug fouling, Smelser idled at 1,000rpm and adjusted fuel mixtures for the 58-minute delay.

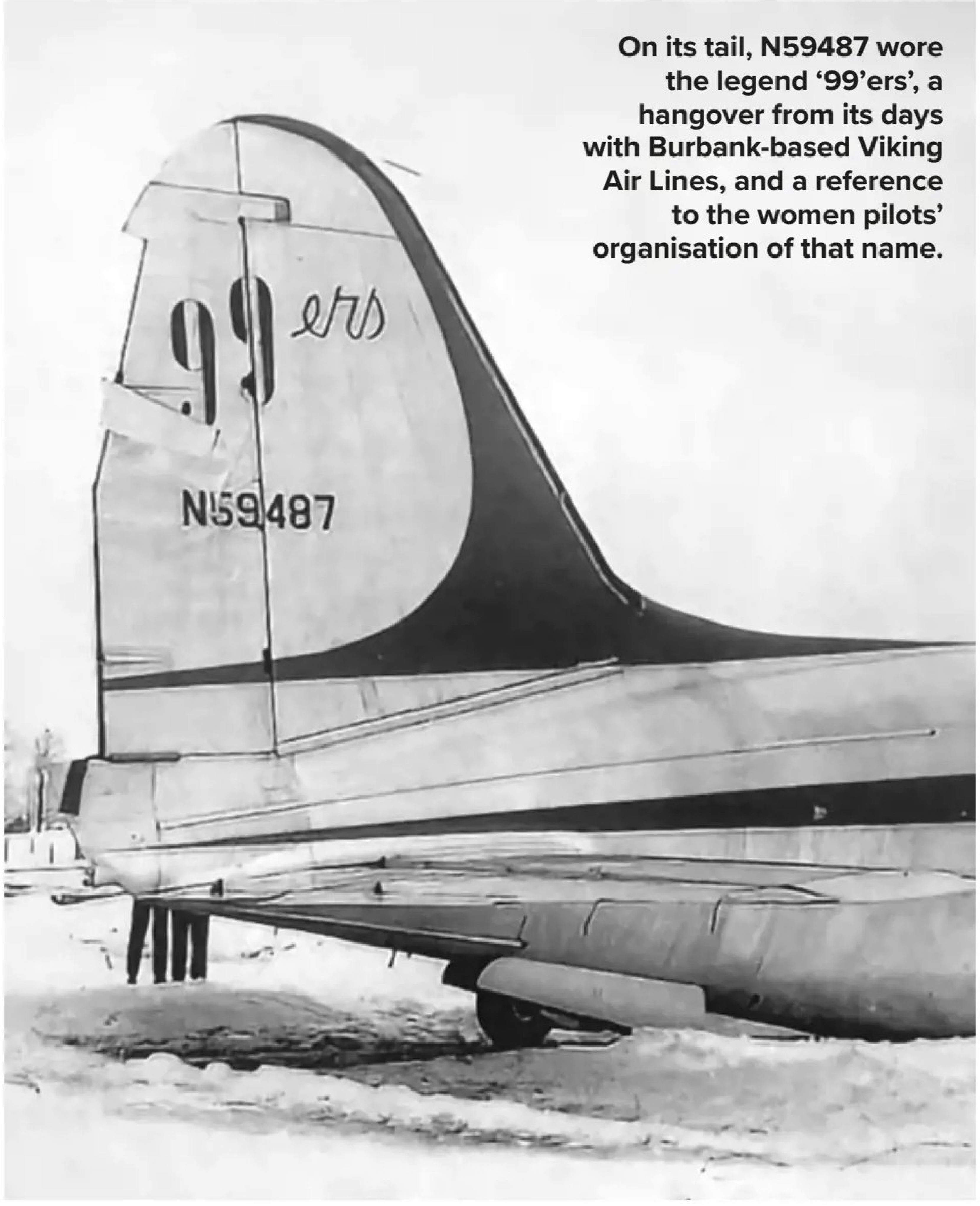
Approved for take-off at 03.54hrs, at 89kt Smelser eased the three-spoke control wheel backwards and N59487's 76ft 54in fuselage elevated into an obscured 600ft ceiling. O'Leary retracted the main landing gear and the tailwheel followed. During the ascent, business travellers, military servicemen and at least two babes-in-arms slipped into slumber. Daine did not rest; she distributed pillows and emptied ashtrays. Within hours, she would prove herself a beacon to a crowd of frightened Californians.

> **“Weather forced a flight plan change”**

Secure on an easterly compass course, the pilots adjusted power settings as the aircraft's ground speed varied between a low 119kt and high 194kt. Every hour, the aircraft became 1,000lb lighter as its carburettors swallowed fuel.

Toledo radio interrupted their reverie with a request to assist a disoriented airliner. For 11 minutes, Smelser and O'Leary guided the miscreant to an airport then, feet resting casually on the rudder pedals and safety belts slackened, they relaxed. Unexpectedly, a wall of snow and freezing rain unseen in the night smashed into them. Instant ice flicking from the propellers cratered the fuselage sides and ripped away several antennae. Its

Hundreds of sightseers viewed the visiting aeroplane but few took photographs during its 21-day stay. VIA JAMES CALDWELL

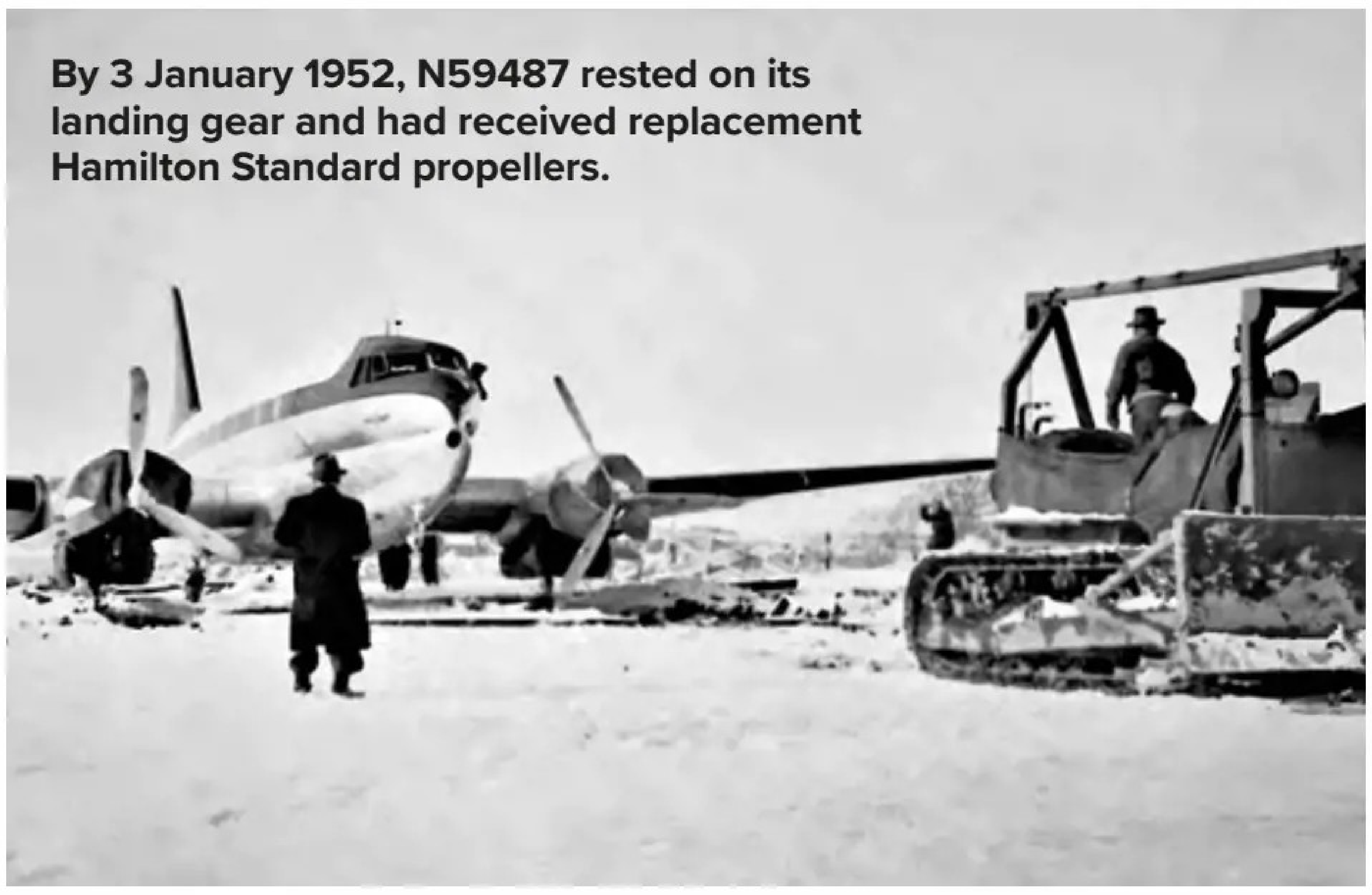

On its tail, N59487 wore the legend '99'ers', a hangover from its days with Burbank-based Viking Air Lines, and a reference to the women pilots' organisation of that name.

drag-producing masses coated the lifting surfaces and external wires vibrated in the slipstream. As the precipitation pelted on, spreading ice overwhelmed the de-icing boots. Daine and her charges had no choice except to endure the turbulence.

Smelser and O'Leary tried to maintain a proper compass heading, recalculated their fuel and cursed the wasted moments at Chicago. Headwinds exceeding 60kt added to the package and storm static nullified radio ranges, bearings and fixes. Without the GPS of future years, they became completely lost, out of sight of the ground. Wings dropping right, then left and the nose pitching up one second, down the next, Smelser concentrated on the instrument panel.

◆

After hours wandering, searching and hoping the stygian blackness would succumb to dawn's softening light, Smelser decided to descend from 9,000ft. Experienced on the route and its landmarks, he estimated his location as somewhere over New Jersey or Pennsylvania. Throttles back and air speed less than the 230kt maximum red-line, he groped down into the miasma hoping the altimeters still functioned. Suddenly, at 3,000ft, a white-capped expanse of water appeared. Both pilots assumed they were over salt-water sea and would shortly find an airport. Out of cloud, they regained contact with Rochester's radio and were horrified to learn the surface below was the fresh water of Lake Ontario, 200 miles north of the intended track.


By 3 January 1952, N59487 rested on its landing gear and had received replacement Hamilton Standard propellers.

Without warning, a diminishing fuel feed caused the port engine to surge and the pilots actioned the propeller feathering button for shut-down. The tanks nearly exhausted, hardly holding altitude with an overheating engine and not a proverbial clue where they were, Smelser and O'Leary had run out of options. A glance at the cockpit chronometer indicated impending doom. Robin Airlines' jaunt from coastal California was about to terminate with N59487 submerging into Lake Ontario's swells. Rochester radio tried to assist with a suggestion to turn south when, without a pop or crackle, the remaining R-2800 spluttered into silence. Simultaneously, Smelser sighted a rolling expanse of land almost obscured in falling snow.

"Not enough fuel", broadcast Smelser. "Heading zero degrees, over land. Sighted small town, both engines out, landing wheels up."

As passing air fluted against the Plexiglas windows, Daine arranged the cabin for an emergency landing. No-one panicked or left their seats as the descending C-46E unknowingly crossed into Canada. The passengers believed no prospect of survival existed. Yet salvation awaited in a tranquil community called Cobourg in the province of Ontario.

While this was going on, a farming family beside a rural road knew nothing of the situation above them. Dairyman Charley Wilson loaded his Studebaker with milk cans while son Larry and matriarch Ruby finished chores. Royal Canadian Air Force and civilian radars were tracking a mystery target. Royal Canadian Mounted Police and Ontario Provincial Police stood by as armed military jets prepared to launch. These were Cold War times.

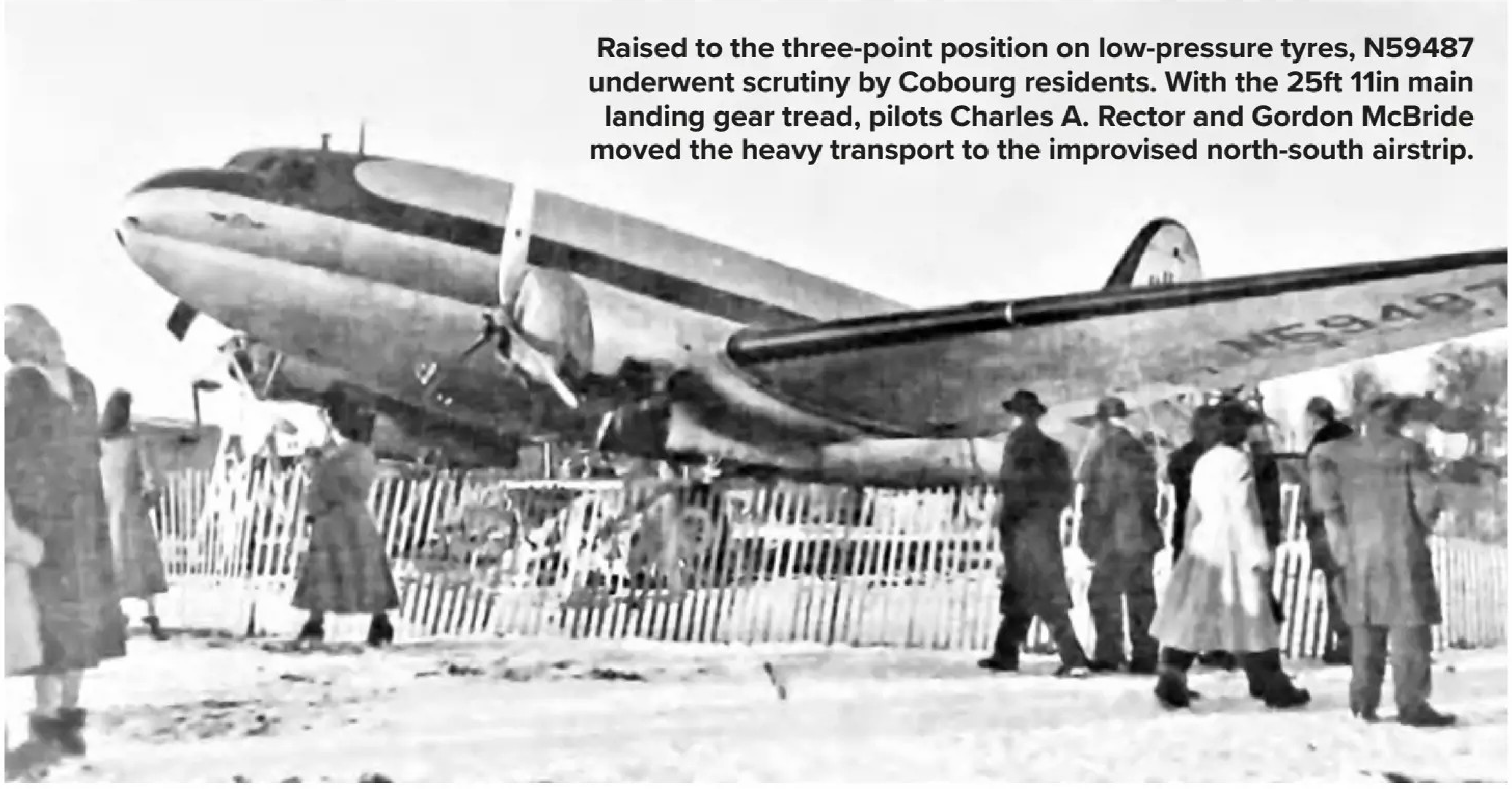
Smelser and O'Leary concentrated on the electric and vacuum instruments. Tree-sprinkled terrain criss-crossed by cedar fences materialised through the windscreens. Smelser knew: "This was it". N59487 had been aloft for six hours with throttles adjusted to maximum-endurance settings.

Wheels-up over farms and marsh grass, the C-46E glided unnoticed from below as its passengers readied to face oblivion. Daine prepared for her final moment as the aeroplane contacted the surface and slid smoothly across a pasture. Instead of turning into crumpling metal and sheets of flame, snow blanketed the wings. "There was a barely noticeable click of the propellers connecting with a strand of fencing, then the streamlined underbelly settled safely into the deep snow, ploughing as straight a furrow as has ever adorned the Wilson farm", wrote the *Cobourg Sentinel-Star*.

Smelser called for landing gear down as the aircraft rushed toward a tree. With its wide wheels providing drag and the tailwheel adding some slight steerage, they stopped in 1,200ft. Passengers sat speechless until Daine ordered their evacuation. No boarding stairs or escape chutes for Robin Airlines. Everyone jumped into two feet of snow dumped during the night. Dazed, no-one had any idea they were 300 miles short of their destination and in a foreign country. A farmhouse stood 900ft away.

"It was an act of God", Smelser said. "We had no idea where we were and thought we were way past Newark and over the Atlantic Ocean."

Word spread throughout Cobourg, and soon after the dramatic 07.40hrs arrival local hospitality overwhelmed the shivering surprise guests, most of whom felt the chill touch of snow for the first time in their lives. Farm-hand Harold Drinkwater guided the luggage-



Raised to the three-point position on low-pressure tyres, N59487 underwent scrutiny by Cobourg residents. With the 25ft 11in main landing gear tread, pilots Charles A. Rector and Gordon McBride moved the heavy transport to the improvised north-south airstrip.

carrying strangers to the small farmhouse where neighbours arrived with sandwiches, woollen socks and even fruit cake and cookies as another snowstorm exhausted the sky. The RCAF disarmed its fighters and Ruby Wilson loaded her cook stove with fresh wood.

Relieved to be alive, the survivors received word that ground transport would shuttle them to RCAF Station Trenton, 36 miles east of Cobourg. To relieve the waiting boredom, Larry Wilson conscripted several impatient men and "put some to work at cleaning out the cows, some at feeding, and the rest I took to slop the pigs and feed the chickens". After an overnight on the military base, the happy group travelled 18 hours by bus to Newark. Border inspectors wished them a merry Christmas. Co-pilot Edgar O'Leary expressed surprise when Canadian customs charged the crew $13 for baggage inspection.

The 'Sky Giant' became a Cobourg-area attraction. Robin Airlines' management back in Burbank considered dismantling the aircraft for overhaul in Toronto, 65 miles west. Instead, local residents stepped up with a treaded bulldozer to smooth a 1,500ft take-off path. Others, working with mechanics from Toronto's Sanderson Aircraft, excavated pits below the engines to lower the landing gear. Replacement propellers ran well, drummed fuel arrived and belly patches improvised from nylon sheeting soaked in glue took care of damaged under-surfaces.

The *Toronto Daily Star* informed the public on 10 January 1952, "one of the world's best pilots with over 12,800 hours" would perform the take-off. Modestly, Robin Airlines' director of operations Capt Charles A. Rector arrived with first officer Gordon McBride. Not accustomed to cold-weather starts, they managed to force the R-2800s into life with repeated gasoline priming under the gaze of 2,000 spectators.

> ***"Everyone jumped into two feet of snow dumped during the night"***

Ready to go, they held full throttle and released brakes as the mesmerised onlookers stared. Nervous electrical technicians and telephone repair men wondered whether the behemoth C-46E would miss wires paralleling the departure path. In what author Ernest K. Gann called a "peculiarly delicious moment", all went well.

According to one witness, "The slipstream blew a blizzard of snow into the faces of the crowd. For about 250-300yd, the wheels rolled along the snow and the airplane rose. Due to the hummocks in the field, the airplane had kept well to the west and the left wing overhung the west ridge of the airstrip. News photographers shot their pictures and ducked for safety as the airplane roared scant feet overhead."

The Commando heads on its way, for a ferry flight to Toronto that wasn't devoid of incident.

Poor weather at Toronto forced a diversion to Trenton in the opposite direction. The next day, Rector ferried the Commando to Toronto's Malton airport (later renamed Lester B. Pearson International) before proceeding to Burbank where a four-person Civil Aeronautics Board team found damning fault with Robin Airlines, which leased N59487 from International Airports. Many issues pertained to paperwork but landings below minimums, unapproved take-offs and excess crew times drew heavy censure. Its report expounded the crew's ignorance or indifference to proper flight planning. Smelser and O'Leary showed that 345 US gallons would be consumed from Chicago to Newark with 430 remaining after landing. This indicated a 99-US gallon per hour consumption, but 150 was normal. The board found the handling "not proficient and incompetent" and downgraded Smelser's pilot licence and cancelled O'Leary's, in spite of the fact they parked a multi-ton glider in a snowbank and saved 48 lives.

As for Robin Airlines, the company ceased operations after the drama in Cobourg but soon restarted as North Continental Airlines. On 18 April 1952, C-46F N8404C's descent into low terrain with fatal results put the organisation permanently out of business. Ironically, N59487 returned to Canada on 25 February 1955 with Vancouver's Pacific Western Airlines as CF-HYI. By November 1967, the venerable Curtiss carried US registration N1463 until moving on to Manila in the Philippines for Astro Air Transport as RP-C1145. Its registration cancelled in 2005, it probably suffered the scrap pile.

Never before had such a large aircraft appeared in quiet Cobourg and never since has the friendly community become involved in what could have been a major aviation disaster.

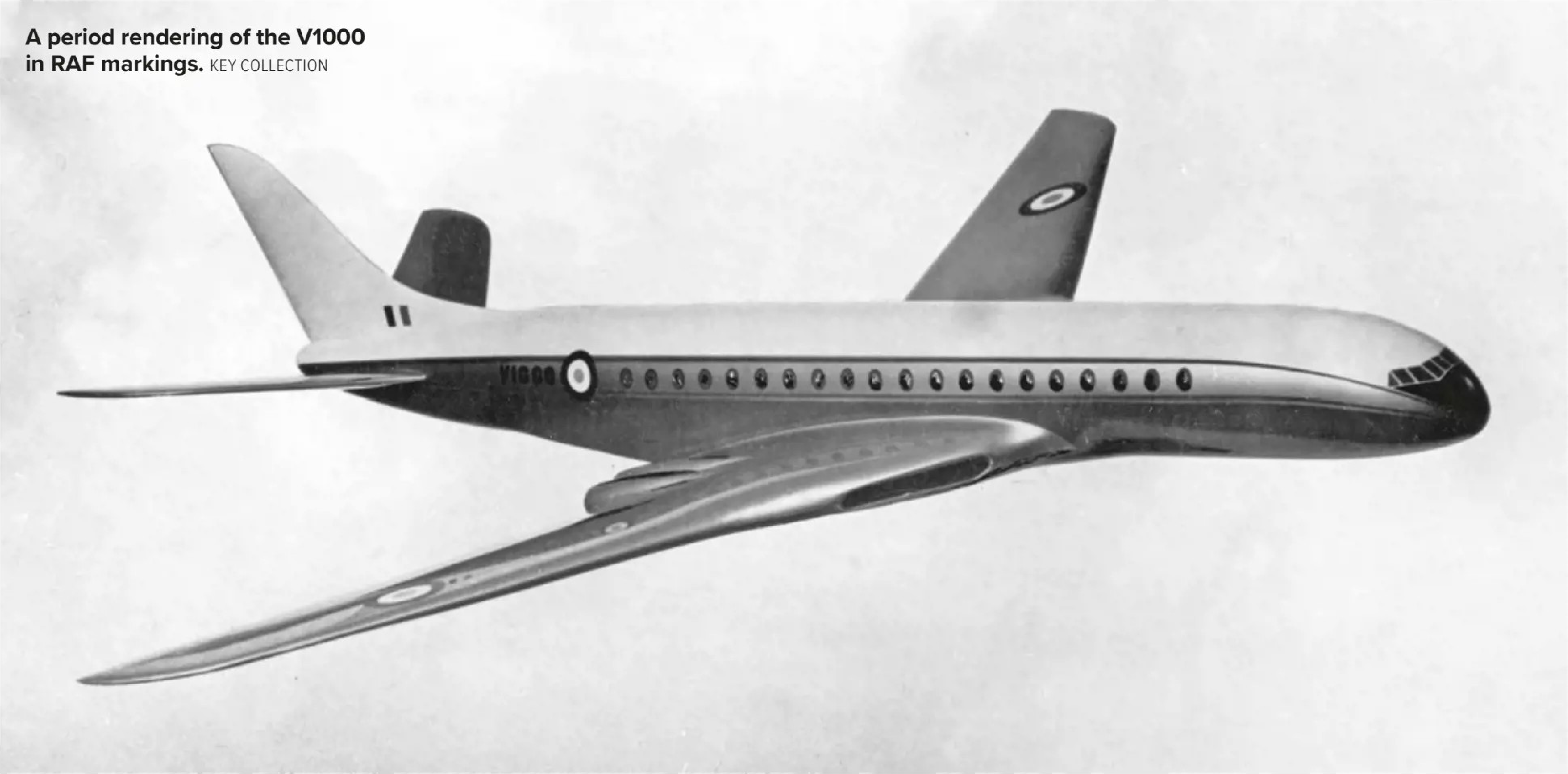
PERFECT 10?

Sixty years ago, the RAF received its first examples of Britain's great new airliner hope, the Vickers VC10. But while the four-jet beauty would serve superbly for decades, its initial selection by the air force was hardly a foregone conclusion. Why did it take so long to decide on the VC10's procurement, when the elegant transport seems like such an obvious choice?

WORDS: CHRIS GIBSON

ROYAL AIR FORCE
104

VC10 C1 XV104 entered service with No 10 Squadron at Brize Norton, which operated the entire fleet, in August 1967. Like its brethren, it received the name of an aerial Victoria Cross recipient, in this case First World War ace James McCudden. AVIATION PHOTO COMPANY



A period rendering of the V1000 in RAF markings. KEY COLLECTION

> *“We have done our utmost to ensure that the RAF’s VC10s differ as little as possible from civil versions and have accepted some minor disadvantages in doing so”*
> **Air Marshal Sir Ronald Lees, Deputy Chief of the Air Staff, 1 September 1961**

The long road to the RAF’s VC10s begins with Vickers looking at the post-war airliner market with plans for a competitor/successor to the de Havilland Comet. Its initial proposal dated from the late 1940s and shared the Valiant’s configuration, taking its wings and empennage and mating them to a new fuselage to create the VC5, VC standing for Vickers Commercial.

The airlines, meaning the British Overseas Airways Corporation, were sceptical of the VC5’s high wing with root-mounted engines that exhausted along the side of the passenger cabin. Nor was BOAC particularly keen on the VC5’s stalky Valiant-style main undercarriage, which it saw as fragile and prone to failure.

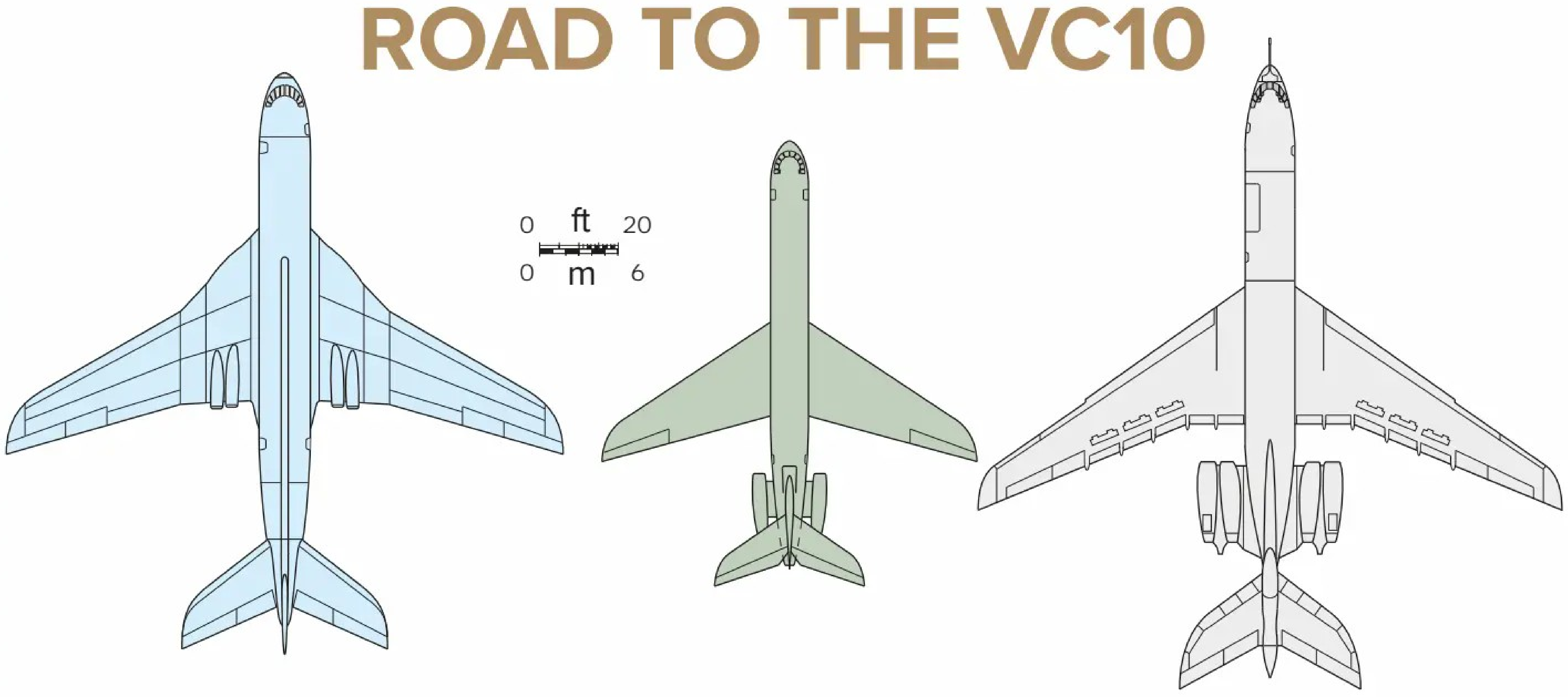
Vickers revised the design, with a new 12ft 6in (3.8m)-diameter fuselage with six-abreast seating, and low-set wings with a completely different planform. The resulting VC7, more widely known as the V1000, attracted the attention of the Air Staff, leading to the issue in October 1952 of specification C123D. This called for a high-speed airlifter based on the VC7 to provide trooping and transport across the empire plus support for the forthcoming ‘V-bomber’ force.

As ever, the specification was audacious, calling for performance on a par with contemporary fighter aircraft and airfield performance being stressed to permit operation from a greater range of airfields around the world. To achieve this, Vickers intended to fit the VC7/V1000 with the Rolls-Royce RB80 Conway, the first bypass turbojet/turbofan to enter production.

The V1000, like many 1950s projects, suffered from weight gain and, as so often with British projects, an ambitious specification. Its history is worthy of a separate narrative, and it soon became a political football for politicians who blamed the airlines and the air force for lack of interest in the type. The V1000 was cancelled on 11 November 1955 and both BOAC and the RAF ordered the Bristol Britannia in its stead.

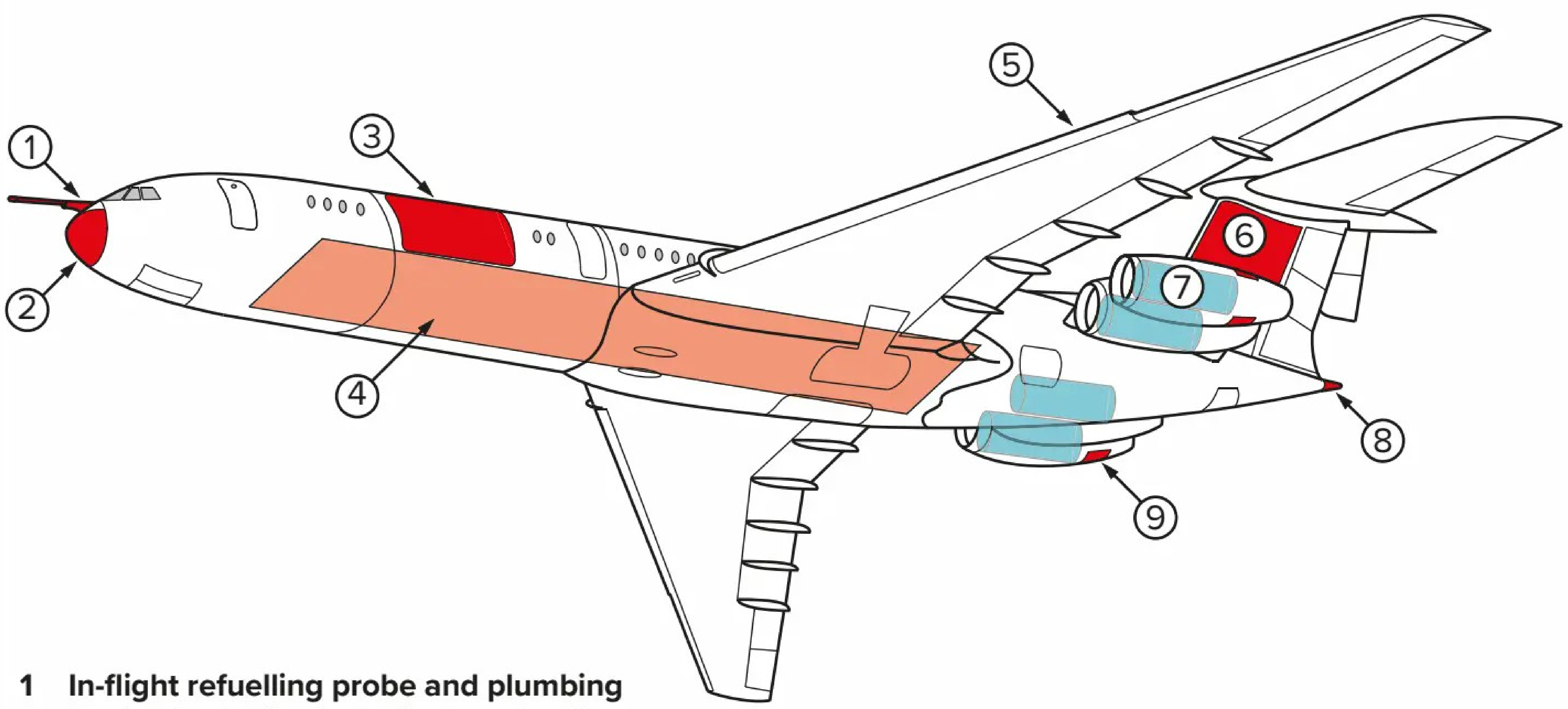
Initial information on a successor to the V1000 reached the Air Staff in October 1956 in the form of a briefing on the ‘Vickers Vanjet VC10 Mk2’. This was a civil jet airliner that used a fuselage similar to Vickers’ Vanguard, a new swept wing and was powered by three Rolls-Royce Conway 10s mounted in the tail-cone. Vickers informed the Air Staff that it could adapt the civil Vanjet to a military transport by strengthening the floor and adding a 9ft by 5ft 10in (2.74m by 1.8m) freight

ROAD TO THE VC10



Precursors of the VC10: from left to right, the VC7/V1000 fell victim to weight gain and a lack of support from the airlines and government, while the three-engined VC10 Vanjet would gain an engine, increase in size and evolve into the VC10 C1. CHRIS GIBSON

RAF TYPE 1106 VC10 C1 FEATURES



1 **In-flight refuelling probe and plumbing**
2 **Revised avionics including autoland**
3 **Cargo door**
4 **Reinforced cabin floor**
5 **Wing profile for Type 1102/1103**
6 **Tail fin fuel tank from Type 1150 series (Super VC10)**
7 **Rolls-Royce RCo 43 Conway from Type 1150 series (Super VC10)**
8 **Thrust reversers on outboard Conways**
9 **Blackburn Artouste auxiliary power unit**

door in the forward fuselage. This evolved, via a BOAC requirement from March 1957 for a long-range airliner, into the elegant four-engined aircraft that is familiar today as the VC10.

The manufacturer proposed many variations on the basic airframe, henceforth referred to as the VC10, many of which tweaked the RAF's curiosity. Seeing great potential in the type, the Air Staff became keen to have the VC10 as a trooper, freighter, tanker and deterrent-carrier. It was also put forward for the maritime reconnaissance and airborne early warning roles but the Air Staff considered the airframe too big and therefore expensive, although Vickers (and latterly BAC) pushed hard throughout the early sixties and again in the eighties to have the VC10 adopted for both tasks. One interesting design study Vickers put to the Air Staff was for a modular VC10. This comprised a common airframe — with engines — aft of the construction joint at the wing box matched to a variety of specialised forward fuselages. It went no further than the brochure stage.

By early 1959 the Air Staff and Ministry of Supply were hoping the VC10 would be available "before the Comet [2s] began to waste". Around this time the possibility of a supersonic military transport was being discussed, the MoS stating that with this in the offing, there was little point in buying VC10s for high-speed trooping. Taking an objective stance on this, the ministry viewed the service entry of a supersonic transport in the mid-sixties as "certainly premature". However, it was also keen for the RAF to take the VC10 to help Vickers, so it was the usual mixed messages coming from the MoS.

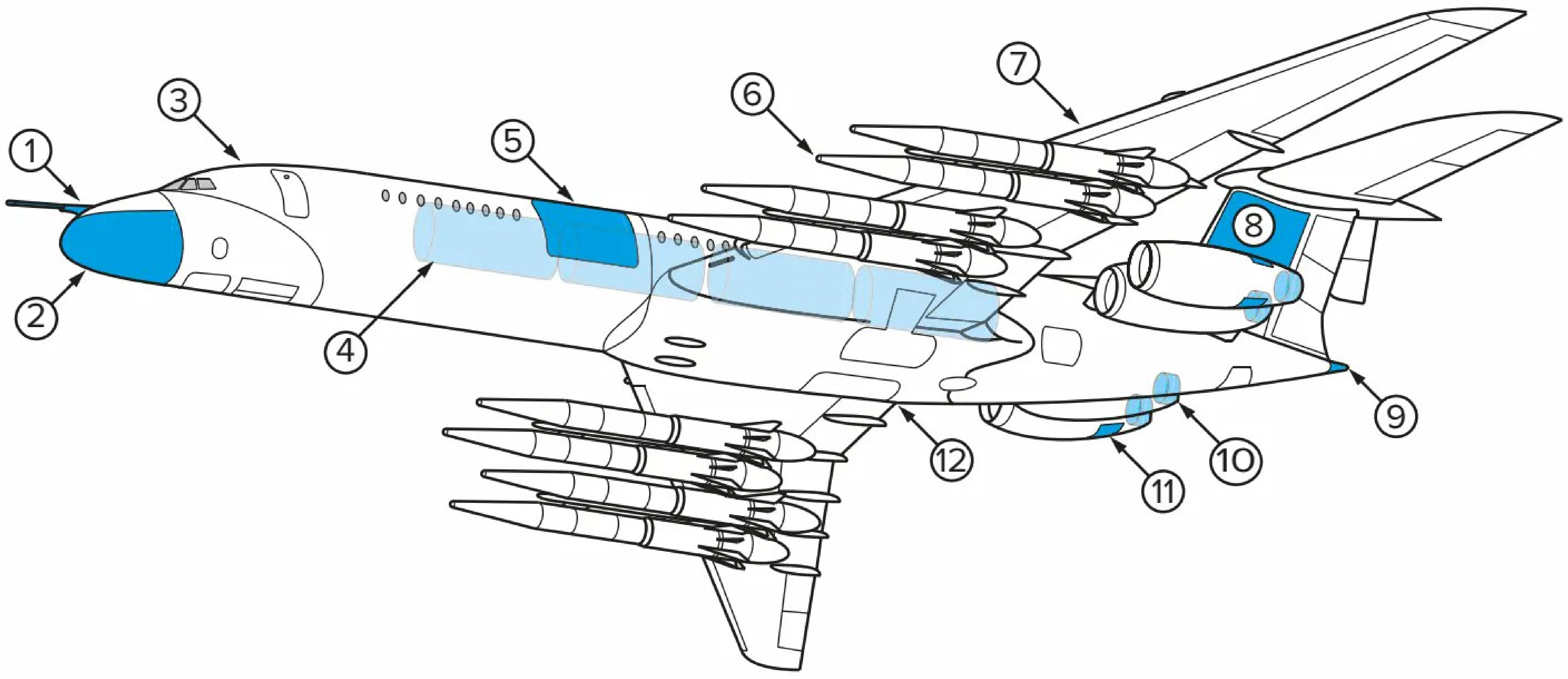
Not that there was harmony between the Air Staff and the ministry. The MoS had, as far as the RAF was concerned, forced the "anachronistic" Shorts Belfast upon the service when it had wanted the "modern" Handley Page HP111. The Deputy Chief of the Air Staff, Air Marshal Sir Geoffrey Tuttle, in early 1959 observed that if the MoS wanted the RAF to procure the VC10 to "help out Vickers", this could lead to a repeat of the Belfast situation.

The DCAS reinforced his message by informing the minister, Aubrey Jones, that he was "not in favour in taking any VC10 aircraft except at the expense of the Britannic (Belfast)" — Tuttle, obviously, was not a fan of Shorts' products. Another factor in

> *"The ministry wanted the RAF to help Vickers"*

VC10 C1 XV109 being prepared for a flight to the Far East with fuel bowsers, catering trucks in attendance and bulky cargo being loaded through the large freight door. Visible on the numbers one and four engine nacelles are the cascades for the thrust reversers fitted to the mark. BLUE ENVOY COLLECTION

RAF VC10 PATROL MISSILE CARRIER



1. In-flight refuelling probe and plumbing
2. H2S/NBS bombing radar/avionics
3. Skybolt launch station and equipment
4. Auxiliary fuel tanks in cabin
5. Freight door to permit fitting/removal of fuel tanks and Skybolt equipment
6. Douglas AGM-48 Skybolt air-launched ballistic missiles (up to eight)
7. Strengthened wing structure with hardpoints for Skybolt pylons
8. Tail fin fuel tank
9. Blackburn Artouste auxiliary power unit
10. Reheat on Conway engines
11. Thrust reversers on outboard Conways
12. Beefed-up main undercarriage and brakes to cater for higher all-up weight

the RAF’s caginess about the VC10 was that it had had its fingers burnt in the past. The Air Ministry’s permanent under-secretary, Sir Maurice Dean, noted on 9 July 1959, “We have had some disagreeable experiences of placing firm and early orders for unproved aircraft; the Swift is an example.”

The very next day, R. C. Kent, assistant under-secretary to the Air Staff, notified the Air Staff about a ministerial meeting involving the MoS, Air Ministry and Treasury. Kent reported that the RAF was to acquire 20 VC10s and the Air Staff “should lose no time in clearing their minds about their employment”. He said the Treasury had “already made it quite clear to me that they will press the point of the compensating economies elsewhere”. Something would have to go.

This news was not well-received. Kent advised that the matter was “highly confidential” and should not “be disclosed outside the circle”. He then asked for a “hypothetical appreciation” of the VC10 to guide ministers’ decisions and indicate any potential glitches that might arise with the aircraft. The “appreciation” was sent to the Minister of Supply, Aubrey Jones, who on 13 July briefed the Prime Minister, Harold Macmillan. Jones described the situation with the VC10, BOAC’s orders and the RAF’s involvement, stating that, apart from replacing the ageing Comet 2s around 1964, there was “no early requirement for the VC10”. He also informed Macmillan that a military VC10 would diverge considerably from the civil version.

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The Air Ministry appeared to be against the RAF acquiring VC10 transports as it was “already bigger than the force which the Minister of Defence decided was all we could afford”. Acquisition of the VC10, in the ministry’s view, was an “unjustifiable over-insurance” and it was too big as a replacement for the Comet 2, a type that had excelled at carrying relatively small numbers of personnel such as slip crews. What was more, the Air Ministry pointed out that the airfields the VC10 could use were restricted by its size and runway performance, while its advantages as a tanker were seen as “marginal” as “we have plenty of Valiants”, Valiant bombers having been converted into air-to-air refuelling tankers. Other prospective applications for the VC10 included replacing the ELINT Comet 2Rs of Signals Command but that would need, at most, three airframes.

By 20 February 1960 there was an apparent fait accompli — VC10s for the RAF — with Brian Humphreys-Davies of the Air Ministry announcing that 10 aeroplanes, enough for one squadron, would be required. Running on the Comet 2s meant deliveries to the RAF could wait until the 35 aircraft for BOAC

Two new airlifters for the RAF of the second half of the 1960s: VC10 C1 XV102 and Belfast C1 XR370 illustrating the size of Brize Norton’s Base Hangar, which opened during 1967 and is still the air force’s biggest such building. KEY COLLECTION had been received, meaning an expected delivery date of 1965 if the aircraft were ordered in 1960. However, the situation was about to change.

The previous day, the Chief of the Air Staff, Marshal of the RAF Sir Thomas Pike, had penned a memo to the DCAS, Air Marshal Charles Elworthy. Stamped 'Secret', it began, "I think the time has come to tell the Ministry of Aviation that we have serious ideas of introducing the BC.10 [sic] as a follow on to the Comet and also as a carrier for Skybolt". Pike instructed the Air Staff to request that the MoA should study the proposal for 10 VC10s and "advise us when they think we can have the advanced version of this aircraft in service and what would be the performance when carrying Skybolt". The CAS continued, asking Elworthy to sound out the MoA about whether the RAF should have the "first few as purely passenger cum freight carriers or could we from the very start fit them up for carrying Skybolt". He ended his memo with, "If we can, I think we should."

A future tanker being tanked: XR806, which was converted into a C1K during the mid-1990s, refuels from Victor K1A XH618.
KEY COLLECTION

"The RAF opted for five troop transports"

The RAF and the 'V-Force' had carried the British nuclear deterrent since 1954, and by 1959 the Americans were developing the Douglas AGM-48 Skybolt air-launched ballistic missile. The RAF intended acquiring Skybolt, fitting a British warhead and launching it from the Vulcan as a stopgap pending a bespoke deterrent-carrier.

Since the ideal method of deploying Skybolt was on standing patrols — called continuous airborne alert or, in British parlance, 'poffling' — a large, long-endurance aircraft was ideal for the role. Several British types were proposed as 'pofflers' with the VC10 considered perfect. The VC10 deterrent-carrier could take up to eight Skybolts and patrol for 10 hours unrefuelled, or longer with in-flight refuelling. When not required for 'poffling', with Skybolt pylons and auxiliary fuel tanks removed, these VC10s could act as transports.

The DCAS, Charles Elworthy, replied on 5 March. He told Pike he had examined the Skybolt carrier and considered the 'bomber' version, with secondary transport role, a better option than the trooper variant the RAF was being offered. Elworthy advised there should be a VC10 fleet and that it should be "mainly bombers with an alternative transport role". However, he thought it best if the first VC10s into service were transports, which could be available in 1965.

The Air Staff had performed a volte face from opponent to proponent, because the VC10 with Skybolt would allow the RAF to keep the deterrent role. The threat to that came from another American weapon, the UGM-27 Polaris submarine-launched ballistic missile and the prospect of the Royal Navy carrying Britain's deterrent.

The Air Staff now saw the VC10 in a different light and Vickers, having caught their attention, bombarded them with brochures. The Air Staff became intrigued by a 'Three-in-One' solution, whereby the troop transport, deterrent-carrier and maritime reconnaissance roles could be filled by a single basic type. This would be cheaper than developing three bespoke airframes, but the downside was that each would be compromised by the needs of the other two.

Sceptical, ACM Sir Edmund Hudleston, Vice-Chief of the Air Staff, pointed out that of the three, maritime reconnaissance was "the odd man out" and the maritime requirement was incompatible with the transport and deterrent carrier. Hudleston's opinions mattered, as the VCAS was responsible for formulating operational requirements and strategic planning. But the debate on 'Three-in-One' and patrol missile-carriers came to an abrupt end on 22 December 1962 when the Skybolt programme was cancelled by the Kennedy administration. The Royal Navy prevailed: Polaris would be provided by the Americans, so the deterrent-carrier went under the water, not up in the air.

The question exercising Sqn Ldr Harper, OR2b at the Air Staff, was whether the RAF should buy the 'off-the-shelf' VC10 or demand a freight capability along the same lines as the Britannia with a reinforced floor and a side-loading freight door. Vickers proposed swing-nose loading which had several advantages but advised it would incur a 3,000lb (1,360kg) weight penalty, although that included local strengthening of the airframe. Other changes would include a completely revised nosewheel mounting, actuators and wheel well. Harper also advised that with easier loading, there would be a temptation to carry larger items and therefore it would be advisable to strengthen the floor's loading rating. This would have a weight penalty of 1,000lb (454kg), but allow carriage of "high density loads".

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The Chiefs of Staff in 1961 had an ongoing concern about reinforcing the Far East and, to address this, examined the RAF's future airlift capabilities. The strategic transport fleet would by 1966 comprise 21 Bristol Britannias, five de Havilland Comet C4s and 10 Shorts Belfasts but the chiefs calculated that to be "in a position to meet our requirements for reinforcing the Far East in an emergency, at least five VC10s would be needed". The word "needed" was very much an understatement as even using five VC10s, that operation would take 14 days rather than the "militarily desirable" week to 10 days. The situation could become critical if the direct route via Aden and Gan was denied, in which case a further eight VC10s would be required.

The Air Staff considered the VC10 as the "only aircraft in sight which nearly approached the ideal specification laid down by the Chiefs of Staff" and an order would need to be placed in 1961 to replace the Comet C2s that were approaching the end of their service lives. Further complications were the civil buyers who, if the RAF delayed an order, would "jump the queue", further delaying the service entry of the high-speed trooper, so an order for five was a prudent move towards a larger fleet at a later date.

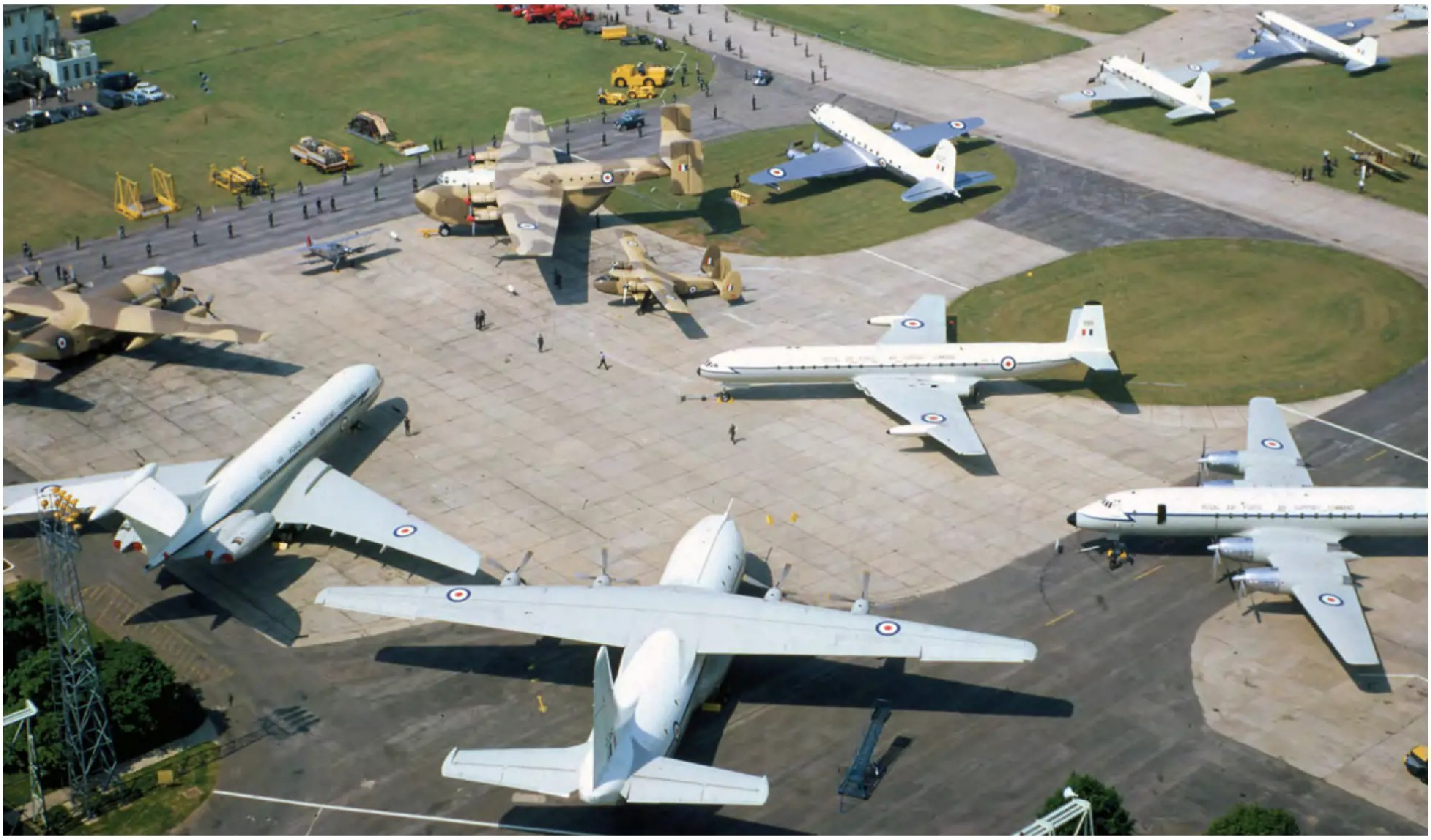
Vickers by mid-1960 had moved on to develop the VC10 for BOAC and the RAF, which had finally opted for five as high-speed troop transports. A complement of five VC10s was considered the bare minimum as the service had requested 23, deemed unaffordable by the Treasury.

The question of whether the RAF took the VC10 was still being discussed in July 1960, with the Air Ministry advising the CAS that the order had not been approved by the Treasury. The discussion hinged on what type of war Britain might be required to fight — all-out nuclear or the limited wars related to the end of empire. Transports would have little use in an all-out nuclear exchange, but a prolonged limited war such as Korea or the Malayan emergency would need logistics support by air.

AVM Robert Bateson, Assistant Chief of the Air Staff (Operational Requirements) was convinced of the need for the VC10 transport and said so on 26 July 1960: "It seems to me that the limited war study confirms the requirement for the VC10s, and that none of the supplementary studies now proposed by the Minister casts any doubt on it". The discussions continued around Whitehall and by late October 1960 the Air Ministry still had no answer, mainly because the Treasury saw no need for haste in placing any orders for VC10s. Attention now turned to how the RAF's transport VC10 should differ from the civil type for BOAC, which mainly involved automatic landing systems that were considered key to operating into islands in the Indian Ocean.

By late 1960 the Air Staff was committed to the procuring five VC10s, but that was dependent on confirmation of funding by the Treasury. The Air Ministry's W. E. Dowling advised on 20 December 1960 that it should ask Vickers for a price quotation on VC10s, adding, "We ourselves remain firm that we shall need five of these aircraft. However, there are uncertainties about the number which we will be committed to buy". By 14 February 1961, Dowling advised ACAS(OR) of the prices for VC10s received from Vickers: £2.95 million each for three, £2.85 million each for four and £2.6 million each for five. Vickers also said it could provide these "during the second quarter of 1965". These prices apparently did not include the additional cost of avionics required by the Air Ministry, estimated at £419,000 for each aircraft.

Bateson queried this and asked the Air Ministry for a breakdown of the costs. The Treasury was now querying



A snapshot of the Air Support Command strategic fleet at Abingdon for 1968's RAF 50th anniversary event: the old guard in the shape of the Comet C4 and Britannia C1 gathered with their replacements, the VC10 C1 and Belfast C1. BLUE ENVOY COLLECTION the urgency, need and cost for five VC10s. In the case of urgency, airlines were not exactly beating a path to Vickers' door to place orders for the type. As for need, the Treasury was puzzled by the reinforcement figures the Air Ministry had quoted: 5,255 troops in March 1961 versus 3,364 a year before, and whether that was required considering the ongoing withdrawal from empire. As for cost, the rise in unit cost was "disturbing" and the Treasury wanted to know how much this was due to "the introduction of special military requirements". Dowling explained the extra cost was "to provide seats, military radio fit, flight deck modifications, thrust reversers and publications" and that the automatic landing system "could cost about £300,000 per aircraft". The Ministry of Aviation chipped in to say the figure included £430,000 as a share of "launch costs" plus £400,000 for "military modifications" and the same for the automatic landing system.

A senior official at the Air Ministry, W. E. Dowling, delivered more bad news on 21 March 1961, advising Vickers had stated it would need to spend about £1 million on airframe research and development "to incorporate these special requirements". ACAS(OR), aghast at this, replied that he did "not believe that the standard of equipment which we have asked for in the aeroplane provides any logical excuse for the enormous increase in cost."

A draft specification, C213P based on the VC10 in its Type 1100 form, was issued in January 1961 purely for costing purposes within the Air Ministry, and very soon pages of data were being pored over around Whitehall. A week later, Dowling advised he thought the "firm's estimates were not unreasonable for the sort of changes we are asking from the civil layout."

> “A civil servant said, 'No amount of Comet 4s can match the VC10s'”

Dowling later described an odd situation when the Air Staff's standard of preparation for the VC10 and specification C213P were drawn up: "there was no BOAC specification for the civil equipment of the aeroplane. Hence it is not that in our SOP we are asking for changes from the civil fit, but that the civil layout now differs from that for which we asked". He explained that the differences included provision for the aero-medical role, backwards-facing seats and a changed galley layout. Among the engineering alterations were the use of another type of hydraulic fluid and Conway Stage 3 engines, which Vickers was due to fit to the Super VC10 anyway.

This led to the entire military VC10 project being re-examined in April 1961, the obvious cost savings being the "particular military features" and associated requirements. An order for additional Comet 4Cs was considered, but the Comet could not match the VC10 for payload or range. Air Ministry civil servant Michael Quinlan pointed out, "no amount of Comet 4s can match the VC10s; the Comet just cannot do the job". The director of air plans, Gp Capt Alec Ingle also stated that support for the Far East, "would necessitate 18 Comet 4s to do the work of 5 VC10s."

The result of all these discussions was a revised SOP, "expected to be materially different from the earlier issue". The Treasury wanted more Comet 4s while the Air Staff revised their specification to match BOAC's VC10s. On 15 June 1961 the Cabinet Defence Committee met and an order for five VC10s at a cost of £13.25 million was sanctioned, subject to Treasury approval. Five was "the minimum required" and Defence Secretary Harold Watkinson said he would provide "final recommendations on the size of the VC10 force" later.

Announcement of the order for the initial five VC10s during the SBAC show at Farnborough was thought to be vital to the type's success in civil as well as military markets. The contract had been provisionally agreed in June 1961, but discussions continued on the small matter of the price, the difficulty being the extra cost of specialist military equipment on the RAF variants. These extras included the reinforced freight floor, cargo door in forward fuselage, in-flight refuelling capability and an Artouste auxiliary power unit in the tail-cone. The main differences from the airliners were that the type used the fuselage from the Standard VC10 with the fin fuel tank and Conway RCo 43 engines from the Super VC10 plus a modified wing based on the Type 1102/1103. These changes would result in a VC10 with the Vickers designation Type 1106.

The Chancellor and Prime Minister approved the order by August 1961 and five VC10s were ordered that September 1961. Six more were added a year later, with a further three, being built for BOAC but not taken into service, augmenting the existing contracts in July 1964. That is how, after an arduous process, RAF Transport Command acquired its 14 VC10 C1s.

No 10 Squadron's VC10 C1s, such as XV109 and XV102, looked superb in the white-over-grey with blue cheatline livery of Transport Command. This scheme was applied for first deliveries in late 1966.
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109
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AEROPLANE *meets* ED LINDSAY

VIA ED LINDSAY

The son of the fascinating man behind the Cavalier Mustang programme can tell the story of the type like no-one else — not least as he still owns and flies one

WORDS: BEN DUNNELL

Surplus ex-military fighters passing into private hands: nothing new about that. It had happened after the First World War, when all sorts of former front-line types ended up in civilian ownership. No surprise, therefore, when a similar trade sprang up in the wake of World War Two. But one of the ways in which it differed, in the USA at least, was how it became a lucrative business. Enormous numbers of airframes, still with plenty of life left, even with development potential, and a ready demand — the opportunities were there for the taking.

This was never more the case than with the North American P-51/F-51 Mustang. Through into the 1950s, as the Canadian and US militaries disposed of the type in vast quantities, the civilian owner community was just getting started. We're not yet talking about what would go on to be termed warbirds but, more often, private aeroplanes in the stricter sense; recreational and business flying for the well-heeled. What's more, there were small air forces in search of equipment for which a Mustang was still a potent proposition. To serve these sectors, enter a Florida newspaper proprietor who became renowned for his support to environmental campaigns.

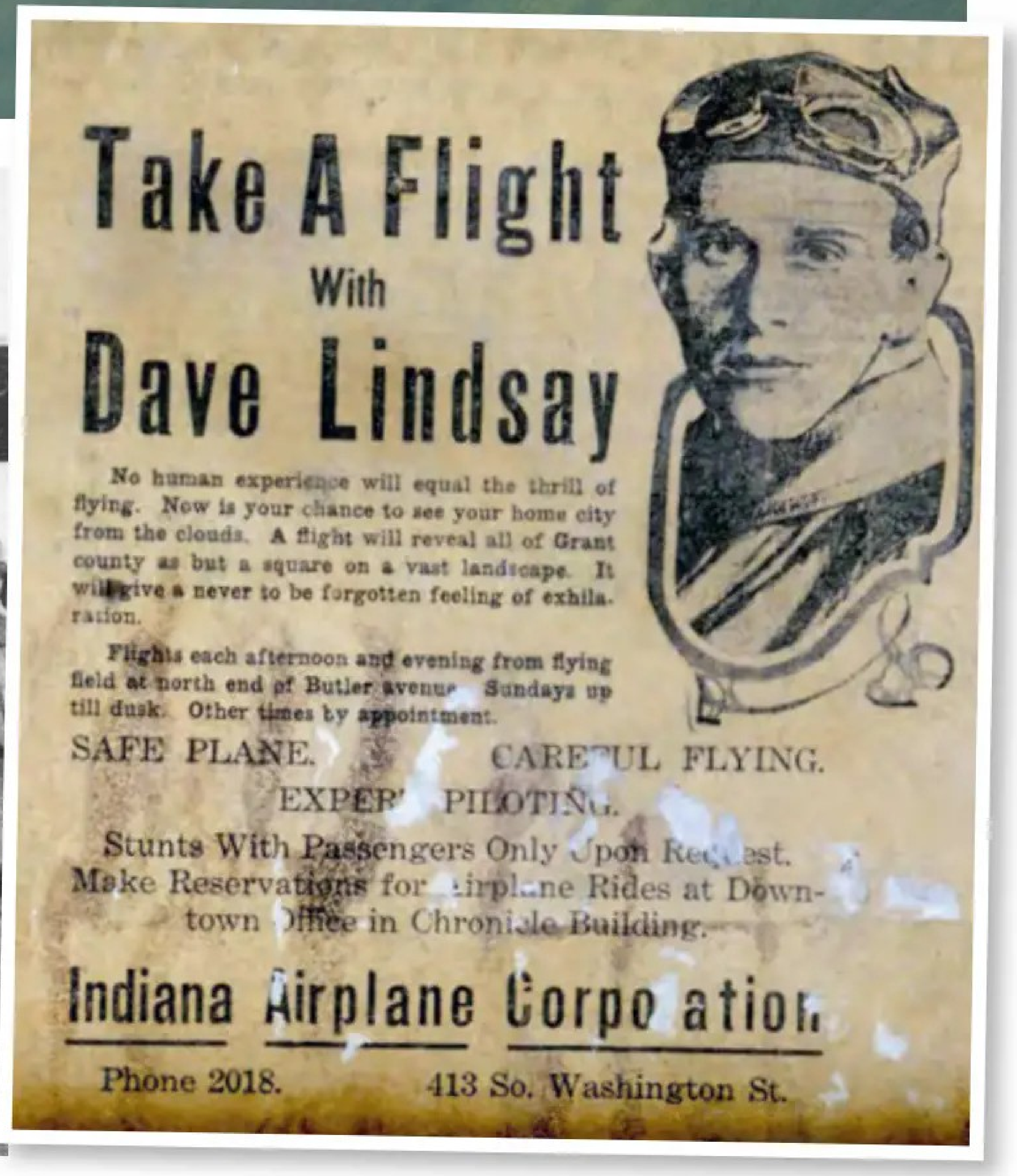
His name was David B. Lindsay Jr, and the companies he founded, Trans Florida Aviation and Cavalier Aircraft, became among the most important in the latter-day Mustang story. He came from a family with aviation absolutely in its blood, and that remains true to this day, as his son Ed proves. A commercial pilot by profession, he still owns and flies one of his late father's products, a stunning Cavalier Mustang II in the variant's characteristic configuration: tall vertical tail, tip tanks. And Ed is very much the keeper of the Trans Florida/Cavalier archive, as well as recalling many notable events in the story first-hand.

As he recounts, "My grandfather, David B. Lindsay Sr, was a World War One aviator. He learned to fly at Kelly Field, Texas, in 1917. He survived the training, which was something back then, and was

Ed's grandfather, Lt David B. Lindsay, during his time with the US Army Air Service. ALL VIA ED LINDSAY UNLESS OTHERWISE CREDITED

Ed Lindsay flying Cavalier Mustang II N51DL, which has been in his family's ownership for decades, near Indianapolis. TREY CARROLL

At Dorr Field, Arcadia, Florida, Lt Lindsay is in the bottom row, third from right. Behind is a Curtiss JN-4.



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A handbill from David B. Lindsay Sr's 1920-23 barnstorming days.

RIGHT: David B. Lindsay Jr, father of Ed, in a Mustang during 1960.

made an instructor in the 43rd Aero Squadron. In 1918 he came to Florida to open a training base at Arcadia, which is just 40 miles west of my home. He instructed there for several months and shipped out just at the end of the war — he went from New Jersey to Liverpool and somewhere near London, and trained with the British. They were shipped over to France, picked up their airplanes in Paris and went to the front, arriving just before the armistice.

"He stayed in France for another year, because he was a very junior lieutenant, and had some interesting duties, one of which was burial officer because everyone else had gone home. I've been reading some of his letters to his parents, and the tragic thing is that he was in charge of a party that actually exhumed a couple of his students to move them to the American cemeteries in France.

> **"Looking at the bills, he thought selling the P-51 would be wise"**

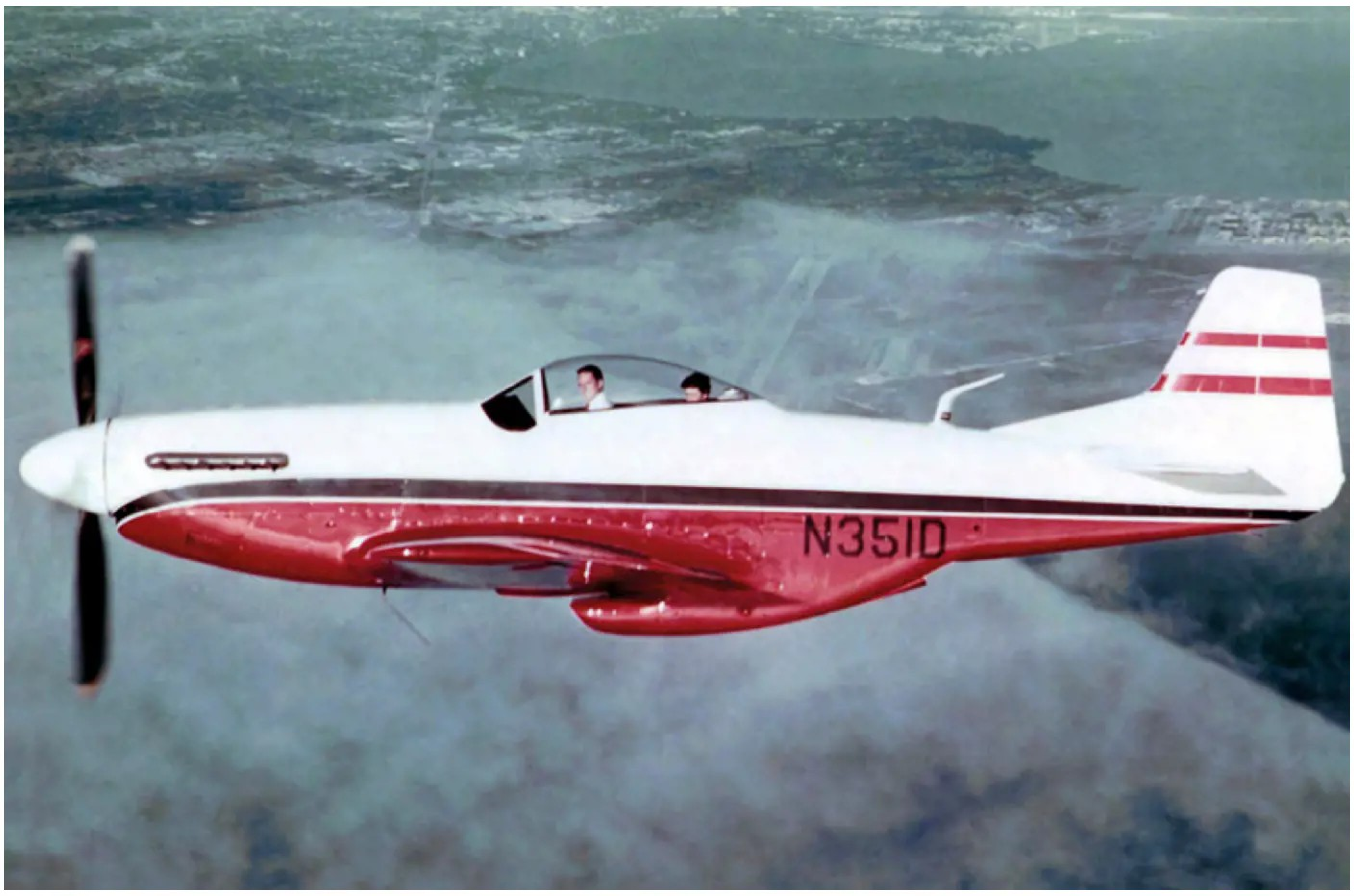
"When he came home he was a barnstormer — he bought a Curtiss JN-4 'Jenny' and he barnstormed around the midwestern part of the US selling rides. I have one of his old handbills on the wall in my house. He put a little money away and was able to buy a newspaper in North Carolina, the *Fayetteville Observer*. He ran that for a couple of years and then came back to Florida, where he remembered Sarasota from his flying in 1918 in JN-4s. The army had an auxiliary field in Sarasota which was basically a farmer's field, and they'd send the students on cross-countries of a whopping 40 miles. He and my great-grandfather started a newspaper group here, and this is where my great-grandfather retired.

"The aviation background coincides. My grandfather remained in the Army Air Corps, in the reserves, and at one point had a Waco UKC four-passenger cabin biplane as a personal airplane. He used that to commute back and forth between Sarasota and Marion, Indiana, where he had an interest in a newspaper there with his cousins. So, my father grew up riding in the Waco and other aircraft with my grandfather."

During the war, Ed's father served as a US Army field artillery officer in the Pacific theatre. Once hostilities were over he finished his studies at Purdue University, Indiana and moved to Marion, where he was a photographer and reporter for the family-owned newspaper, and got married. In 1948 he came to Sarasota and worked under his father as general manager of the group which ran the *Sarasota Herald-Tribune*. Taking over the editorship from his father during 1955, as Ed puts it, "He was very passionate about it, and he did a lot of good for the community and our state."

And he resumed flying. "He'd gotten his PPL just before the war, and got his instrument rating and his commercial certificate. He owned a couple of airplanes: he had a North American Navion, and he and a partner owned a Beech Model 18, so he had about 3,000 hours by the time he got to 1957, when the Canadians were the first to surplus the Mustang. With the quest for speed to get from A to B faster, he purchased a surplus Canadian Mustang [P-51D RCAF 9286, which

BELOW: Previously a P-51D with serial 44-73483, N351D was an early Cavalier Executive Mustang, here in the hands of David B. Lindsay Jr and sporting the famous 'Cavalier stripe'.



LEFT: One of the Dominican Republic Air Force B-26B Invaders, serial FAD 3205, which came to Sarasota to accompany Mustang delivery flights.

became N3993A and then N550D] and hired a guy called Charles Fox to fly it down from Toronto to Sarasota. He dropped it off, my father drove him to Tampa and put him on an airliner back to Canada, and he left the flight handbook on the seat of the aircraft.

"My father checked himself out on the Mustang. On his first flight he lost all the hydraulics, and he realised the aircraft was, as you'd say in your country, knackered. He contracted with a local fixed-base operation to overhaul it — he took out the old fuselage fuel cell of 85 gallons and added a rear seat and some modern radios. My mother sewed a new interior for the aircraft. He flew it down to Venice, Florida, where there was a paint shop, and had it painted in a new scheme which my father and an architect friend of his worked out. That became the 'Cavalier stripe'.

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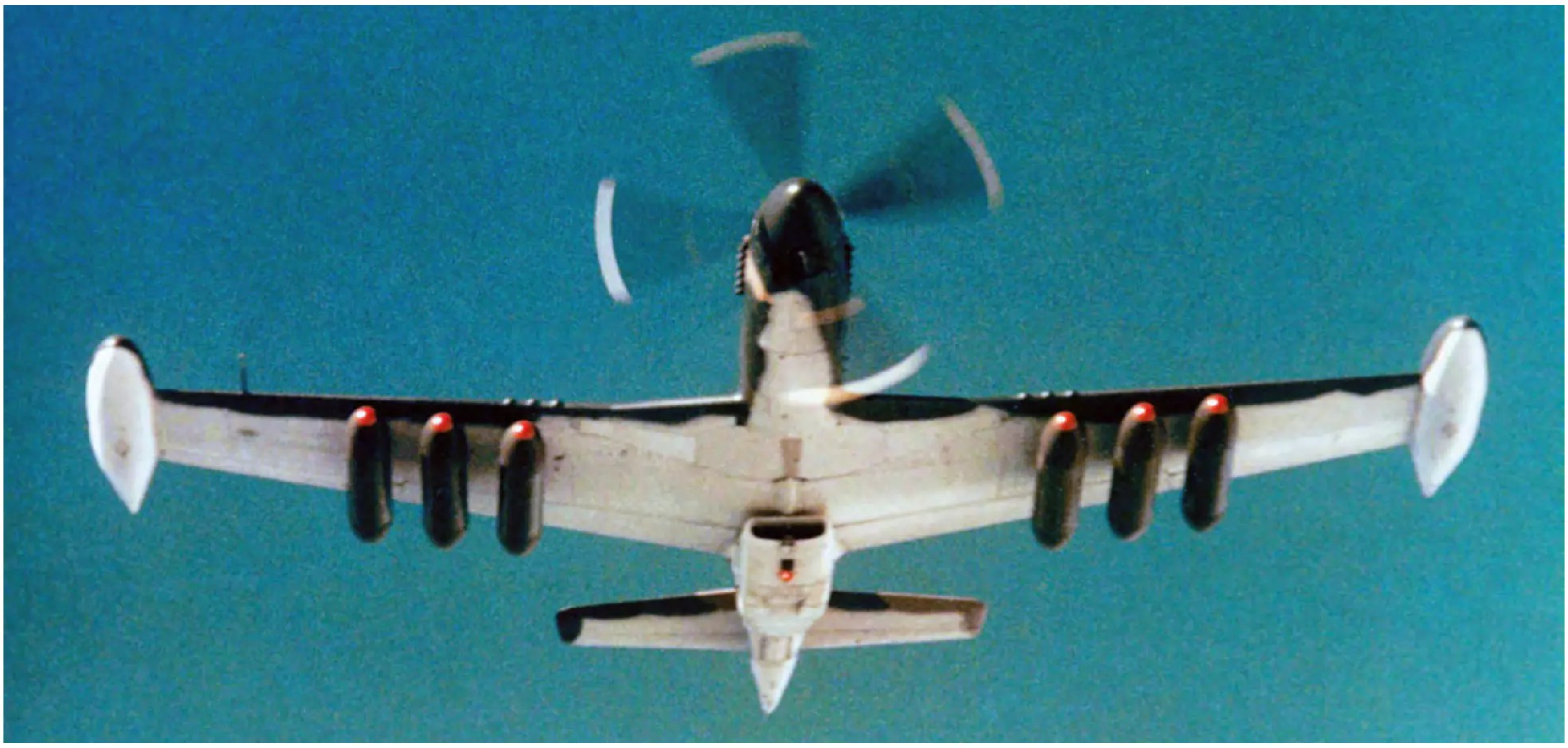
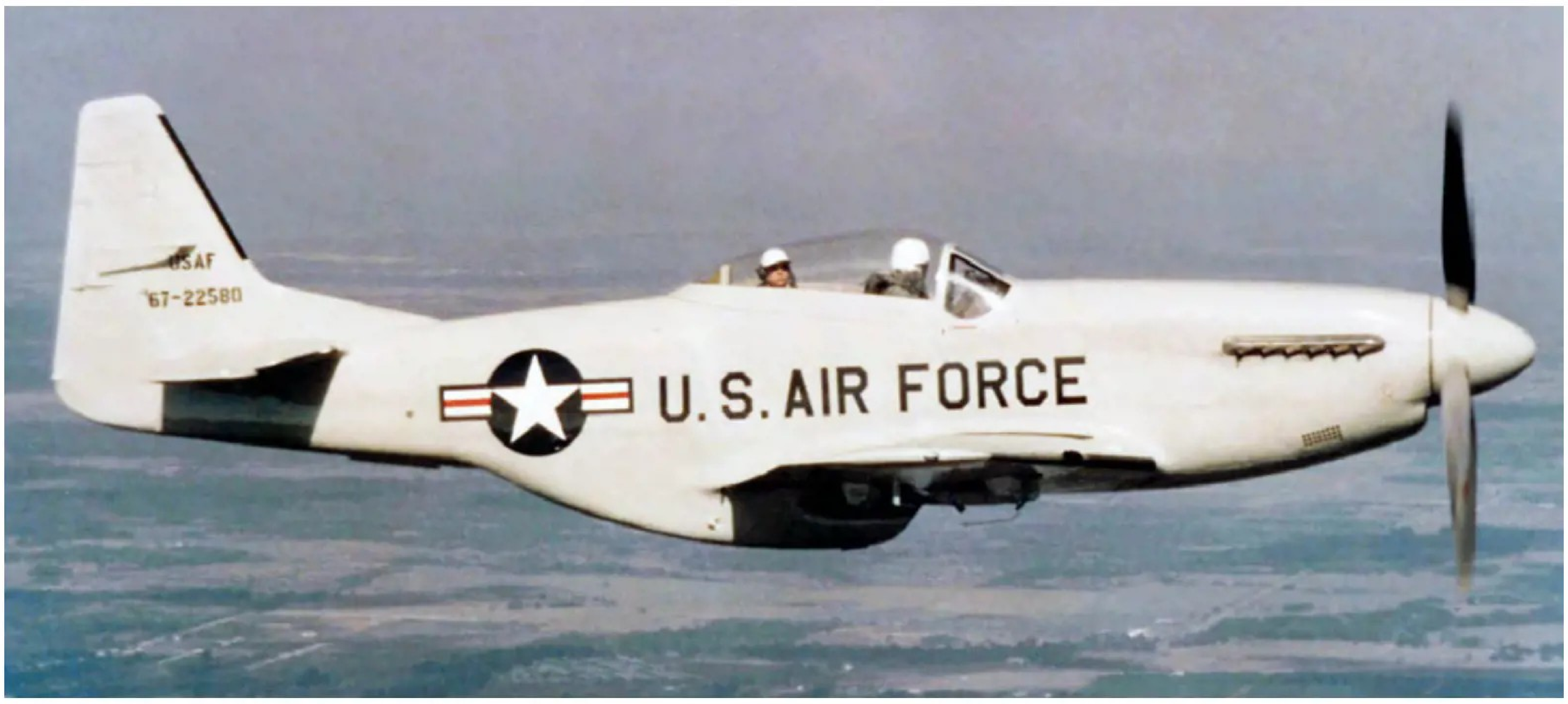
"When it was completed, a fellow showed up and said, 'My, that's the most beautiful Mustang I've ever seen. Would you like to sell it?' Looking at the stack of bills he had for the airplane, he thought that would probably be a wise choice, so he sold it and started over. That's how the company began. He bought several Canadian Mustangs from an organisation called the Crown Assets Disposal Corporation, and then the US Air Force began to surplus P-51s in late '57 and '58, so he started to buy airframes through air force auctions for $900-1,500."

That machine, N550D, was effectively the prototype of Trans Florida's Cavalier Executive Mustang. Those that followed were converted to order for private owners. "We had some interesting characters who came by. You may be familiar with the mystery novel writer Mickey Spillane: he was very popular in those days. He'd been an instructor pilot during the war, and he was featured in a couple of advertisements for Cavalier. One summer my father leased an aircraft to the president of IBM [Thomas J. Watson Jr], who'd been a military pilot in World War Two". The sheer number of pilots trained by the American military meant potential qualified customers were around.

"Removing the 85-gallon fuselage tank", recalls Ed, "cut the range of the aircraft down to 750 miles. To get it back they used drop tanks in those early days, and most of those drop tanks cut the indicated air speed by about 25kt or more. So, to get that range back and keep the speed by not adding the drag of the tanks he started pursuing the tip-tank modification. That was in about 1960. By then he'd hired a general manager for the company, William Brownell, a former air force fighter and bomber pilot who



BELOW: The first Cavalier Mustang II, N4222A, with Zuni rocket pods attached in 1968. This is the aircraft Ed still owns.



RIGHT: A pre-delivery 'Peace Condor' Cavalier F-51D, 67-22580, for Bolivia.

flew Mustangs and Thunderbolts in the Washington DC Air National Guard. He was also a mechanical engineer, and by then they'd figured out that tip-tanks had much less drag than an underwing tank. They began the process of getting an FAA supplemental type certificate to add chord-line-mounted tip-tanks. In the early days they were 96 gallons each, so that brought the range back with very little drag."

The civilian Cavalier Mustang series at this point encompassed a selection of different models, each two-seaters, their type numbers corresponding to their statute-mile range. The basic version was the Cavalier 2000, with a pair of 110-US gallon tip-tanks. Below it in the line-up were three variations with no auxiliary tanks: the Cavalier 750, equipped solely with two 92-gallon internal wing tanks; the Cavalier 1200, with two L-shaped bladder tanks of 48 gallons each; and the Cavalier 1500, on which the bladder tanks were rectangular and each had a capacity of 63 gallons. The Cavalier 2500 was the same as the 2000 but added a pair of 60-gallon internal fuel cells in the wings. A lower-cost Cavalier Special incorporated "many features of the Cavalier 2000 conversion and the newest modifications and improvements", but was an overhaul rather than a total rebuild.

> *"The fellow may have had 'vibraciones,' but in his trousers"*

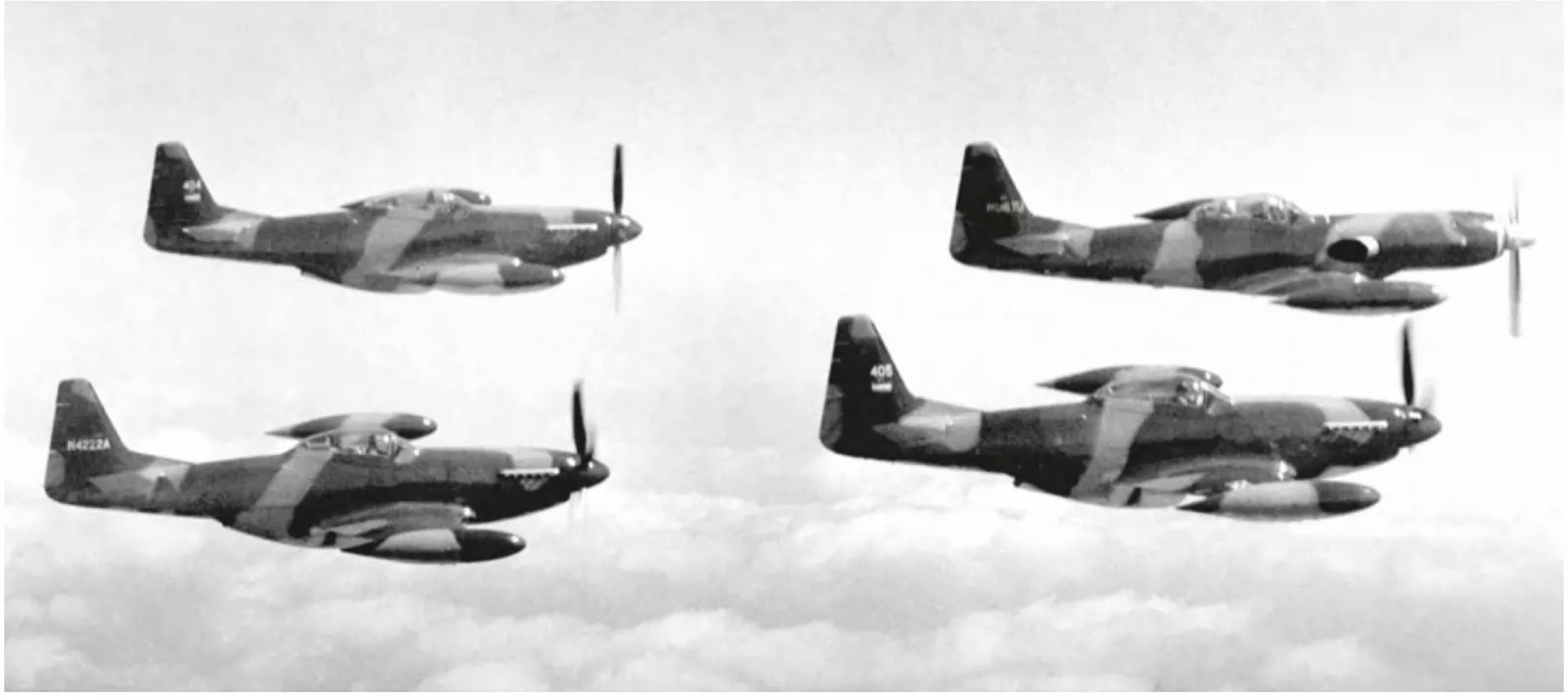
Trans Florida Aviation became the Cavalier Aircraft Corporation in August 1965. A company called the Mustang Aircraft Corporation also owned some of the airframes, "but", recalls Ed, "that was my father basically trying to finance the business. While he had a very successful newspaper, he also had a very serious father who wasn't thrilled with the airplane business."

It quite rapidly branched out from the private-owner market into the military world. "The first military contract was with the Dominican Republic in 1963, which the State Department approved. They were not Cavalier Mustangs — they were what we call IRAN, inspect and repair as necessary. Because of the proximity of the Dominican Republic the aircraft were ferried to Sarasota, and they did 31 of them over a couple of years. I know they were given Spanish cockpits.

"The Dominicans would normally use a Douglas B-26 Invader to lead the fighters, usually four Mustangs, to Florida. On the first trip in 1964 the plan was to fly from Santo Domingo to Opa Locka near Miami to clear customs, and my father flew down to meet them and lead them back. This gaggle refuelled, went through customs and took off. One of the Dominican pilots immediately called to say he had 'vibraciones,' vibrations, and he was returning to Opa Locka. The rest of them carried on to Sarasota. It turned out the fellow may have had 'vibraciones,' but they may have been in his trousers — he had a girlfriend in Miami. They sent someone down to collect the airplane.

"They did this three or four times to get all the airplanes to Sarasota, and each time my dad said the impressive thing was how they would stuff the Invader full of supplies for the return. All sorts of

RIGHT: The Rolls-Royce Dart 510-powered Turbo Mustang III was David B. Lindsay Jr's brainchild.



LEFT: **A rare November 1968 quartet of Cavalier Aircraft products: the Turbo Mustang III leads a pair of Cavalier Mustang IIs, 404 and 405, destined for the Salvadoran Air Force, and company demonstrator N4222A.** KEY COLLECTION

supplies, like refrigerators, electric ranges and underwear for their wives. They would go to the local department store, put it all in this B-26 and take off for the Dominican Republic. When the airplanes were done they'd come back and do the same thing again."

Another modification which would be key to further military models came as a result of David Lindsay purchasing an ex-National Advisory Committee for Aeronautics example, serial NACA 108. Quite an early-production P-51D, it was later redesignated as an ETF-51D, the 'E' standing for 'exempt' to denote it was no longer a front-line aircraft. "It had the high vertical tail", says Ed, "which NACA had also applied to its B and C-model Mustangs. The NACA test pilots determined the airplane needed more vertical… going from the B and C to the D, it lost quite a bit of fuselage area when they added the bubble canopy, and the idea was to put that longitudinal stability back in the aircraft, especially when carrying underwing stores, bombs, drop tanks or that sort of thing.

"My father acquired that aircraft early on in 1959 from Charles Snydor in Richmond, Virginia, for $950 — I have the receipt. He flew it to Sarasota, and it was disassembled and stored for quite a few years. When they began to build the airplane in 1967 as a Cavalier Mustang II, they found with the four extra underwing hardpoints that the taller vertical tail was something they liked for how it improved the handling. They were able to acquire an FAA supplemental type certificate for the vertical fin extension, and that's how they put it on the civil aircraft. There was really no down-side to it, except some people don't like the aesthetics."

The aeroplane in question was N4222A, which made its maiden flight as the first Cavalier Mustang II during December 1967. In a camouflage scheme it acted as the company demonstrator, and today, registered N51DL, it's the aircraft Ed owns and flies. Among the major innovations his father devised — and patented — was a revised weapons panel, which can still be seen on it. "On an original North American Mustang, all the weapons controls were down between your feet, in a sort of sub-panel. My father came up with the idea to put it up on the left side of the glare shield in the field of view of the pilot, so when you're getting ready to set up to drop, fire or whatever you were going to do, you weren't looking between your feet."

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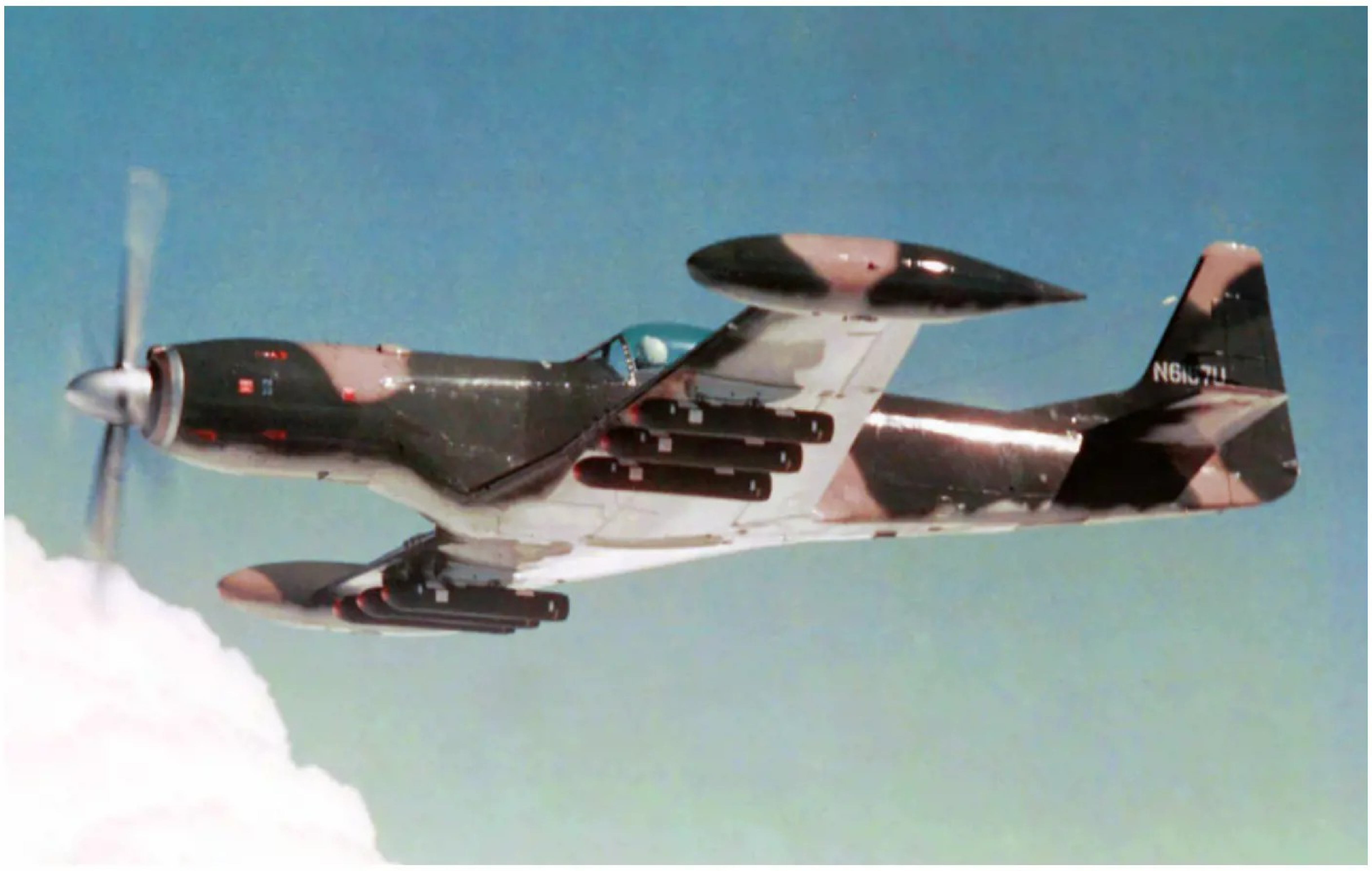
Part of the US government's Military Assistance Program involved supplying equipment to aligned nations, and the availability of Cavalier Mustangs attracted its interest. A direct government-to-government contract named 'Peace Condor' was signed in 1967 with Bolivia, involving seven Cavalier F-51Ds — with the tall tail but no tip-tanks — and two dual-control TF-51Ds. All of them received new US Air Force serials, prefixed '67-' to denote the fiscal year, reflecting the extensive rebuilds that were carried out. As Ed puts it, "They were completely stripped-down, pressure-cleaned and built up as new aircraft with no attempt to maintain the integrity of the original Army Air Forces serial number. I know that upsets the spotters, a lot of whom are friends of mine, but that's just the way it was.

"Those were ferried down by US Air Force pilots, Skyraider guys from the Air Commandos at Hurlburt Field, Florida. My father had a professional instructor, a very accomplished guy called Berkeley Barron. He was an Englishman whose full name was Harold Bruce Berkeley Barron. During the war he flew Lancasters, and afterwards he came over to the US and got a job as an instructor in the US Air Force, because in those days the air force's primary flight training was all done by civilians. He flew T-34s, T-28s and T-37s, and then in the early '60s the air force took it all in-house and eliminated all the civilian instructors, so Berkeley came to work for Cavalier and was chief instructor for many years. He would give the Air Commandos a transition from the hulking Skyraider to the Mustang, and they took the airplanes and flew them down to Bolivia, usually stopping at Howard AFB in Panama."

A pair of two-seat Cavalier Mustang IIs were also modified for the US Army. Given '68-' serials, they and a Cavalier-refurbished F-51D were earmarked for chase duties on the Lockheed AH-54 Cheyenne attack helicopter programme. "They were operating a couple of T-28s", says Ed, "and my understanding is the T-28s couldn't keep up with the Cheyenne". When the AH-54 was cancelled in 1972, the Mustangs continued working on other test efforts including trials for the US Marine Corps of a wingtip-mounted 106mm M40 recoilless rifle.



ABOVE: Piper took on the Turbo Mustang III, N6167U, in 1970 and used it in the construction of its first PE-1 Enforcer.

By then, the Cavalier Mustang II had seen its first, and most famous, combat. This was during July 1969's short conflict between El Salvador and Honduras, best-known outside the combatant nations as the 'Football War' or 'Soccer War', coming as it did after clashes following World Cup qualifying matches involving the two countries. Five single-seaters were bought from Cavalier in 1968 for the Salvadoran Air Force — one of which was lost in a take-off mishap not long after it arrived, being replaced by a private owner's stock P-51D — as well as a TF-51D.

Those Cavalier Mustang IIs, recalls Ed, "had the tip-tanks, tall tail, a back seat, solid-state Bendix radios and all-new plumbing. They were completely remanufactured or rebuilt. That was the only contract my father did that was a direct Cavalier-to-foreign government contract, with the approval of the State Department. I've got the contract somewhere, and looking back now it's pretty astounding to see the prices of things. Propellers back in those days were $2,500, not $100,000."

The resulting combats with Honduran forces proved costly for the Fuerza Aérea Salvadoreña. Among its Mustangs alone, two suffered a ground collision while taxiing out for a sortie and were put out of action, while a third was shot down in a dogfight with two Honduran Air Force Corsairs. But the Cavalier aeroplane had now been to war, and David Lindsay had sold El Salvador another aeroplane in the form of a Canadair C-54GM North Star.

"My father got seven North Stars from Canada", remembers Ed. "They were unpressurised military transports... the airliner was pressurised, and they tried to move the inboard exhausts to the outside because the airplane was painfully noisy, something of which I have first-hand experience. It was something like 108 decibels in the cabin, and I always think of your Queen Elizabeth flying all the way back from Africa in one of those things. How she could hear anything afterwards...

"He got them initially for the engines — he wanted Merlin spares — and they were ferried to Sarasota. But he operated two of them and sold one to the Salvadorans for use as a transport. When I was getting my operational experience on the Boeing 737NG, I did a flight with my airline from Atlanta to San Salvador, and the fuselage of that North Star was in the middle of the airfield being used as a fire training device."

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The other big military deal was with Indonesia. It purchased two TF-51Ds straight from Cavalier in 1971, five Cavalier Mustang IIs and another 'TF' via the Military Assistance Program during 1973, plus kits which were sent over to modify its stock F-51Ds with new electrical systems and the like. Ed recalls, "There were two phases, 'Peace Pony I' and 'Peace Pony II'. The contracting was all through the air force, which took time. I remember as a little boy going out to Sarasota to watch Mustangs being loaded into a [C-141] Starlifter — it was a big deal to have an aircraft of that size come into Sarasota in those days. I think they could put two of them in. Of course, in the North American manuals there is an instruction for how to build a crate for a Mustang, so my father hired some guys to build crates to those specs, they crated them up and shipped them off to Indonesia.

"They were concentrating on the military airplanes because that was far more lucrative, but there were still some civilian ones. The most famous one was N51RH, Bob Hoover's second Cavalier, which became *Ole' Yeller*. His first Cavalier was N2251D, which was destroyed at Oshkosh when someone tried to put high-pressure oxygen into a low-pressure system, the bottle exploded and blew the fuselage in half. Cavalier was contracted with Rockwell to build a second aircraft for Bob Hoover, and that was one of the last ones built [it was finished in 1971 as a Cavalier 1500]. My father and Mr Hoover were very good friends. He stayed at our house whenever he came to town, and we stayed with him in Los Angeles when I was a boy. I once had a ride in a Shrike Commander with him and saw the Hearst Castle from the air — he was rather good at steep turns, as you can imagine..."

The aircraft for the Indonesian contract were finished by another company, Field Services, as Cavalier was closed during 1971. However, that was not before another David Lindsay innovation. "The turboprop originally came about in '67, the same time as the Cavalier Mustang II. The idea was more power. The Mustang IIs had transport Merlins, which had quite a lot more power — a stock Merlin in a Mustang was 1,490hp, whereas those Canadian transport engines pulled quite a bit more manifold pressure and were up at about 1,700. But the natural evolution was to think of a turboprop engine to replace the Merlin, for performance, weight and all those reasons. The only one available economically in those days was the Rolls-Royce Dart, because it was starting to retire from US commercial service.

LEFT: Indonesian Air Force officers at the Cavalier headquarters in Sarasota with a 'Peace Pony' TF-51D, N851D.

"My father bought four Vickers Viscounts from United Air Lines; I remember seeing them lined up out there, all timed-out. From their [Dart 510] engines they were able to put one engine together that would run, and put that into a Mustang airframe in 1968. That became the Turbo Mustang III. Of course they later realised the British had gone all the way to the Mustang IV during the war, so he decided to call it the Enforcer just before he sold it to Piper. Piper was able to get the engine he originally wanted, which was the Lycoming YT55, a much shorter engine with similar horsepower."

With Cavalier Aircraft having shut down, Lindsay acted as an unpaid consultant to Piper on the Enforcer. He had been encouraged to pursue the concept not least by a speech in which Deputy Secretary of Defense David Packard called on entrepreneurs to put forward fresh concepts and weapon systems, and with the US Air Force seeking a new close air support aircraft, the time seemed right. The Enforcer made its maiden flight in single-seat PE-1 form on 29 April 1971, and ex-Cavalier people went to help build them. Ed recalls being taken along as a youngster to see the results.

"We were there when they were flying the first iteration of the Enforcer in 1971-72, and I watched one of them crash. They built a two-seat, dual-control [PE-2] version, N202PE, and they decided that the airplane when it was carrying a lot of underwing stores needed a larger tail, so they extended the leading edge of the vertical to give it more area in addition to the vertical cap that came from Cavalier. My father thought they needed to build a new horizontal, to make that larger, but the Piper people came up with the idea that they wanted to double the chord length of the elevator trim tabs, in theory giving the elevator a little more area and a little more effect. He argued against it because this was a high-speed airplane and flutter was certainly a factor, and that's what happened". The resultant accident occurred off Vero Beach on 12 July 1971, though thankfully the pilot survived.

> ***"I rode with Bob Hoover and saw the Hearst Castle from the air"***

A USAF evaluation of the remaining Enforcer for counter-insurgency purposes, codenamed Pave Coin, showed that it performed well. No order resulted, but David Lindsay continued to lobby on Piper's behalf. The growing desire to cut procurement costs led in late 1974 to renewed political interest in Washington in the potential for an Enforcer purchase to supplement 'higher-end' platforms such as the Fairchild A-10. Lindsay told a House Armed Services sub-committee, "we are at the point today where the Pentagon has been forced to admit that the Enforcer will do all we have claimed, and at a very low acquisition cost. The bar now to operational flight tests is a remarkable conclusion, that because there is no sponsoring service, there is therefore no 'requirement' for the aircraft."

Only in 1979 did Congress fund to the tune of nearly US$12 million the building by Piper of two brand-new Enforcers for a fresh USAF evaluation. These much-modified PA-48 models underwent trials during 1983-84, again with good results but without any production contract. Lindsay considered this a mistake, as a thesis written around that time makes clear. Its authors from the Naval Postgraduate School, who interviewed him, noted how "his twelve-year personal dedication to promoting the Enforcer concept all over the country and his testimony year in and year out to members of Congress kept the program alive in the face of adversity."

Still, he was no stranger to pursuing causes about which he felt strongly. At a time when environmental matters were hardly foremost in many minds, David Lindsay Jr was unafraid to take them on. Keen, for instance, to show others the damage being done by phosphate mining, he took CBS News flying over the affected areas in his Cessna 310. And a decision in the wake of his father's death from smoking-related diseases to ban all tobacco advertising from the *Herald-Tribune* was similarly principled. When he sold the family newspaper business to the *New York Times* in 1982, he'd certainly made his mark.

But what of David's youngest son Ed? "My first airplane ride was in a North Star", he says. I was a little boy, four years old, sitting on my father's lap. This one had a VIP cabin in it — it came from Canada that way — and I made the mistake of opening the hatch from the VIP cabin to the cargo area. The wave of noise hit me like a brick wall.

"My father had a Cessna 310 as a personal aircraft, so I grew up riding in that. But just like everybody else, I sorted out in the mighty Cessna 152; soloed at 16, got my private at 17. I went to university and got distracted with the world. I thought perhaps I might be a banker or something like that, but I did a few interviews for that and realised it wasn't for me.

"So I continued flying, got my commercial, and fortunately an old friend of my father's in Sarasota gave me a job as a charter pilot. I flew single-engine Cessnas, Barons, Cheyennes and Citations. I did that for seven years and ended up as director of operations for the company. Then I decided to make the leap to the airlines and was hired by TWA. I was there for two years as a flight engineer and then a co-pilot on the Boeing 727 — I loved that aircraft — and went from there to Delta."

Ed first flew the family Mustang in 1991, aged 27. "My father was somewhat reluctant for a couple of reasons. He'd lost some friends in Mustangs over the years… He'd been away from the Mustang for quite a while, mainly due to age, and it took a while to convince him. When I first soloed it I think I had 4,500 hours, and I'd flown the T-6 and other tailwheel aircraft.

◆

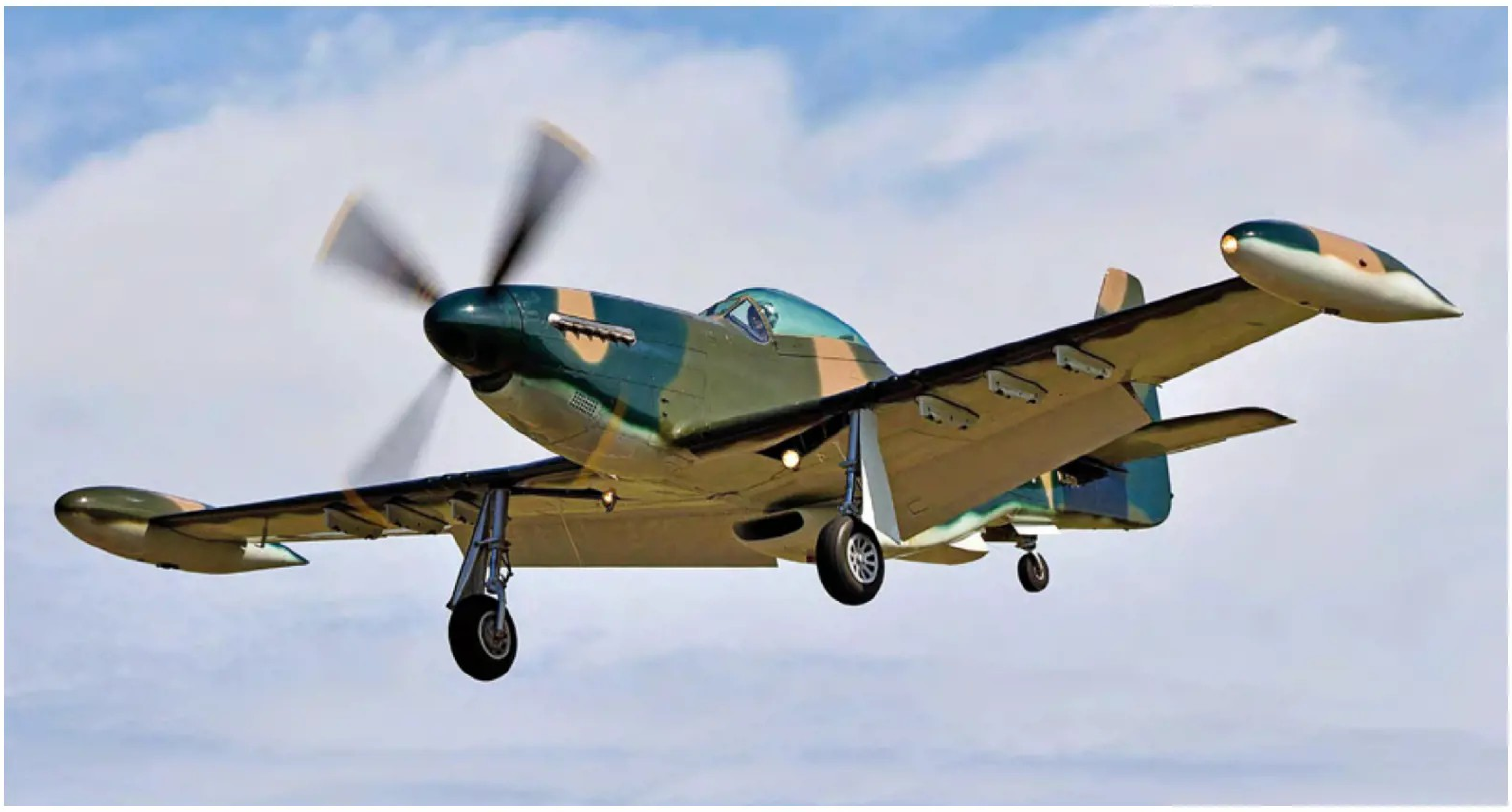
"What I really enjoy is when you take it somewhere and how much people enjoy it. I've had some unique experiences with the Cavalier configuration because it's the only one that still has the tip-tanks. One I remember at an airshow in Eagle, Colorado, was when a gentleman came up, tapped me on the shoulder and handed me a Cavalier flight manual. I said, 'Oh, that's nice. Where did you get that?' He replied, 'It came with my airplane'. It was a guy who had bought an airplane from my father in the '60s. He was on holiday in Colorado and heard me fly in with the Merlin, drove to the airport and found me. That was a nice reunion. And I've had the aircraft at Oshkosh and Sun 'n Fun many times."

How does flying the Cavalier Mustang II compare to a standard P-51D? "Everybody asks about the tip-tanks. All I can say is that when the tip-tanks are empty, one doesn't really notice them at all, other than looking out of the corner of your eye and seeing the mass of the tanks. When the tanks are full, you notice a lot of roll inertia; in other words, you begin a roll and you actually have to stop it because of the weight. It's much like flying a Learjet, an MU-2, a Cessna 310 or something like that… And I notice a little bit of difference in longitudinal stability with the vertical fin cap."

Ed can make that appraisal because he's flown other P-51s, as well as the Wood family's F8F Bearcat and various other piston and jet-powered historic types. This has come in parallel with a long airline career, on the Boeing 737-200, the 737NG, the 767 and 777. And his is still absolutely an aviation family. His daughter Jane works in London as UK corporate communications manager for Airbus, and has her private and instrument licences, while her twin sister is also a private pilot.

Back home in Sarasota, Ed carries on looking after, and flying regularly, his aeronautical pride and joy. "This one was never the prettiest, it was never the best. That seemed to elude my father. The whole adventure began with him wanting a nice, reliable Mustang. He never really got his dream Mustang because he always had to sell it. The one we now have, the prototype of the Cavalier Mustang II, was just the one that was left over. That's how we ended up with it. It's now been in the family for 66 years."

Some achievement, indeed — and a fitting continuation of the Lindsays' fascinating story.



RIGHT: There is no other Mustang flying in the world in the configuration of N51DL. ALAMY

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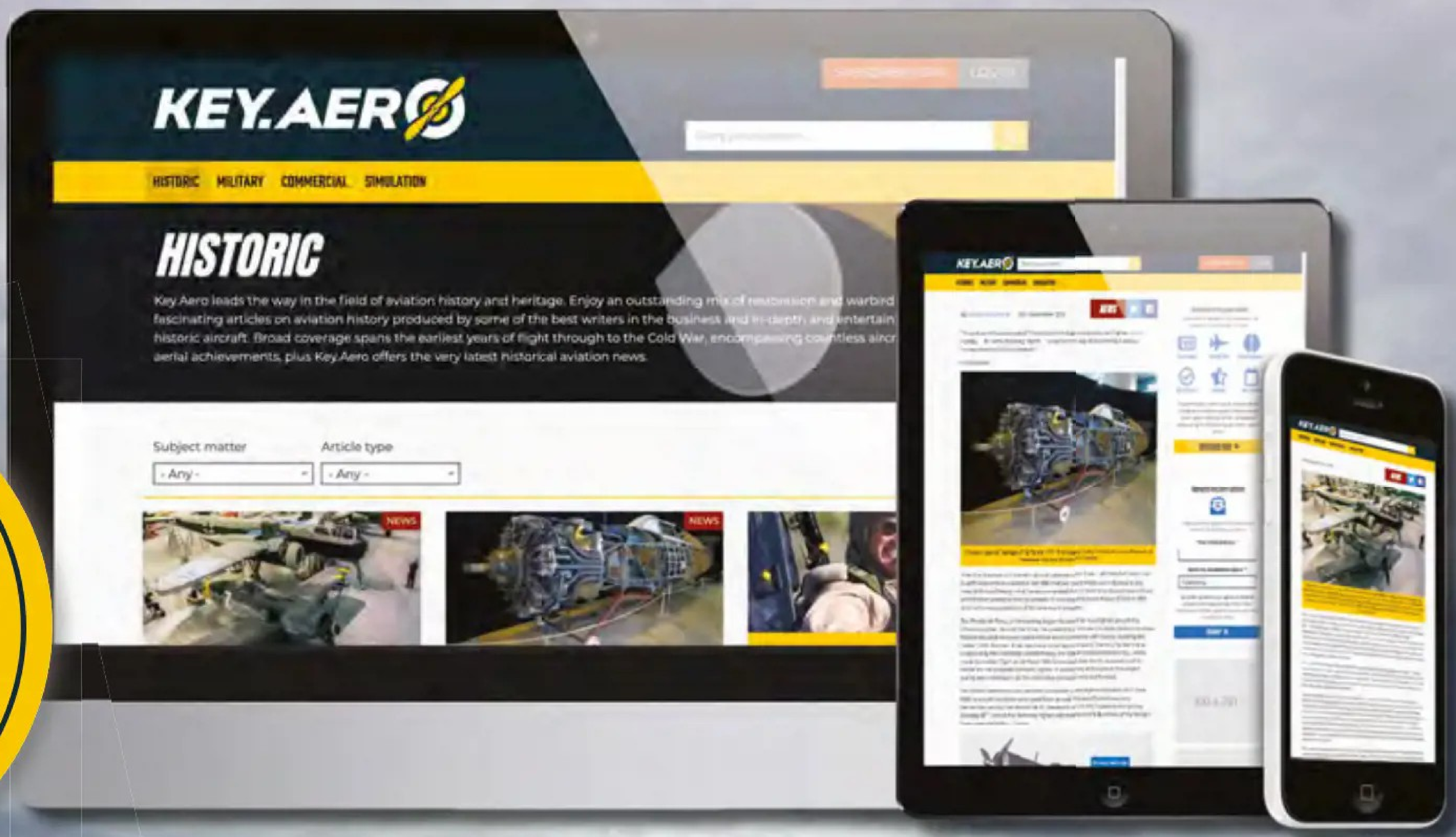

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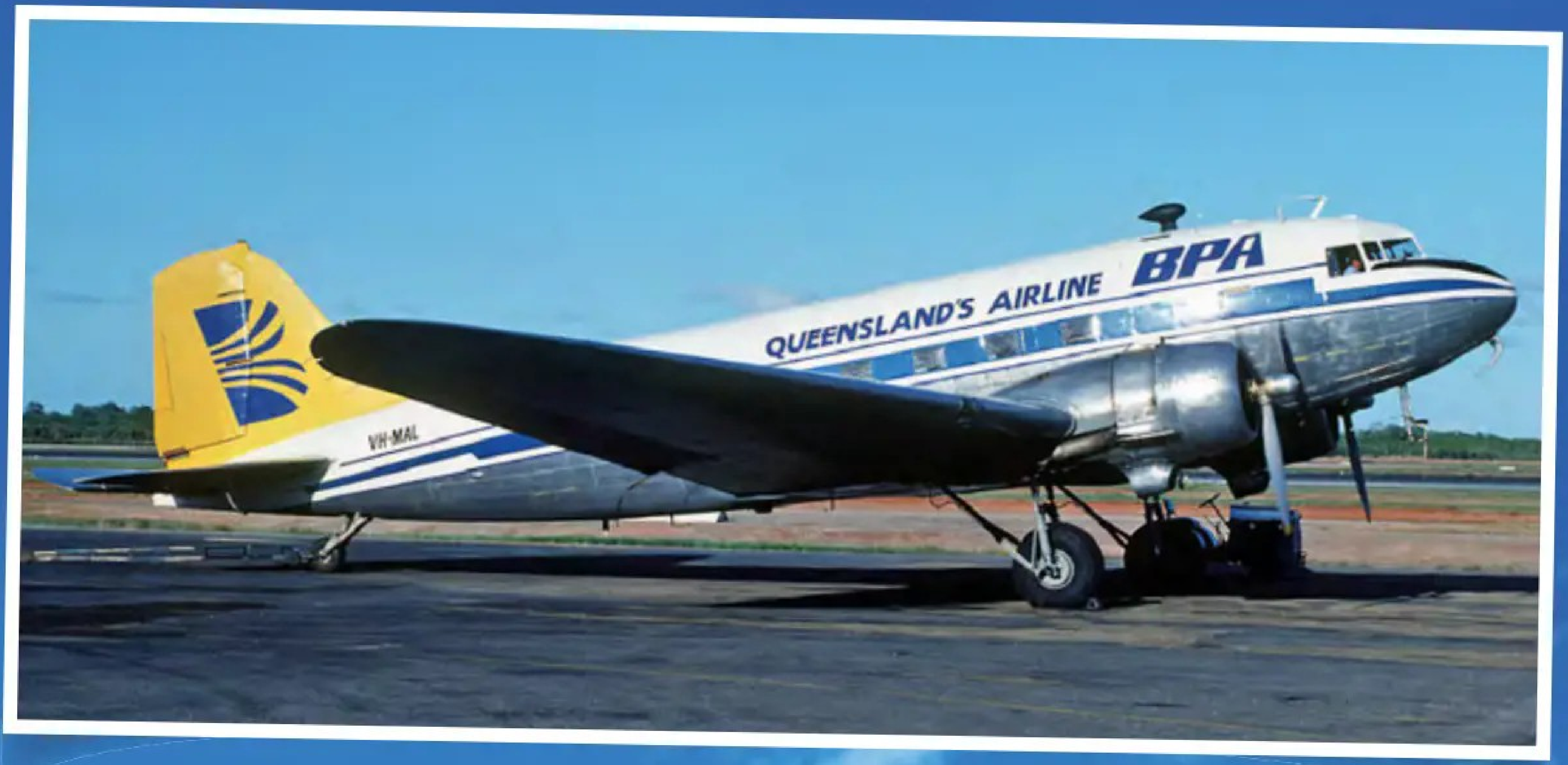
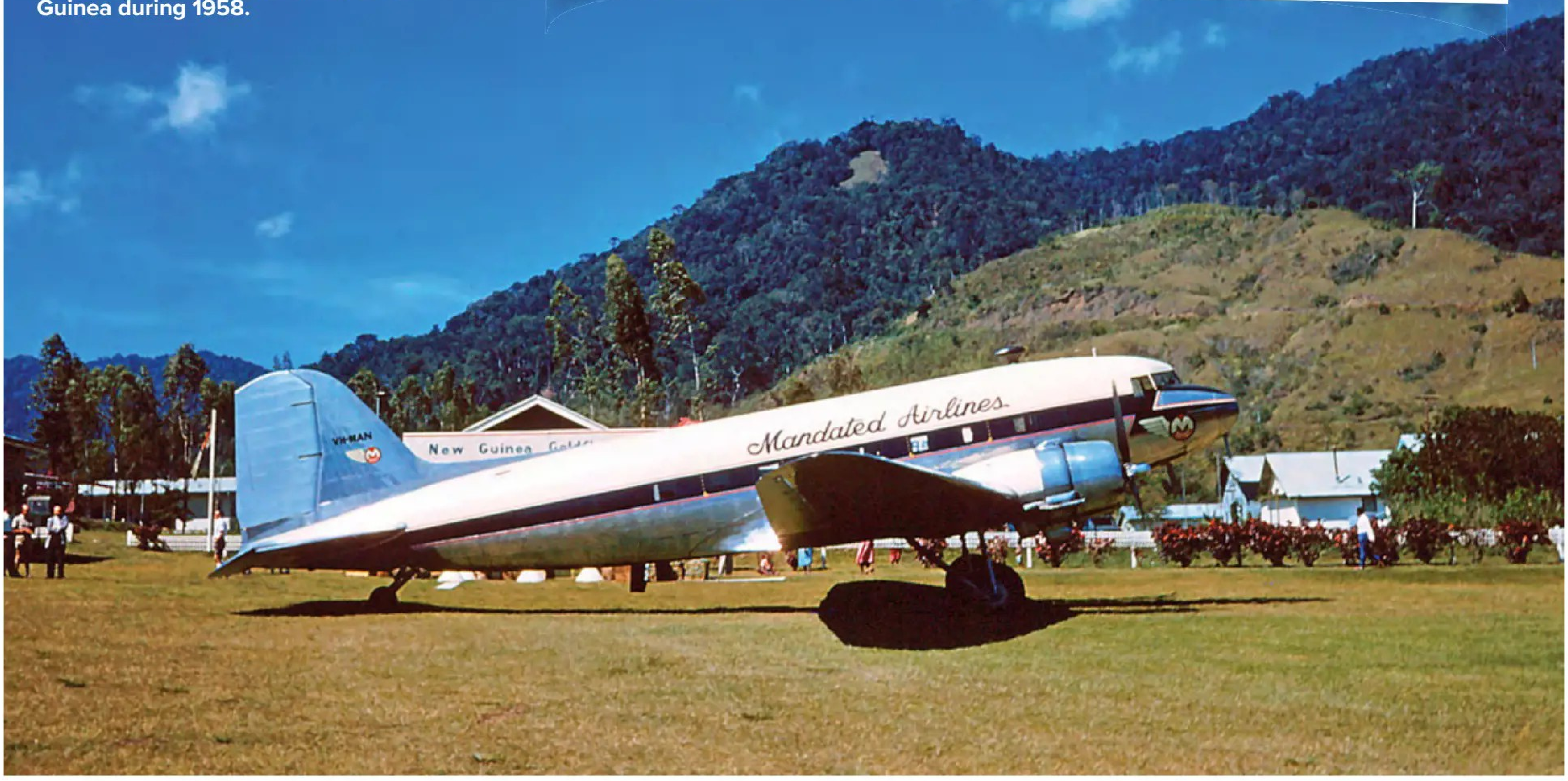
DC-3s DOWN UNDER

In one form or another the Douglas DC-3 has been plying its trade in Australia, New Zealand and the Pacific islands for decades. Many airlines started using the type when it was cheap to buy and operate, when spares were plentiful and so was the fuel. Passengers loved the idea of air transport, especially in the outback regions of Australia where getting from place to place could take days and maybe weeks. The collection of **Bob O'Brien** features some superb images of the DC-3's 'down under' heyday

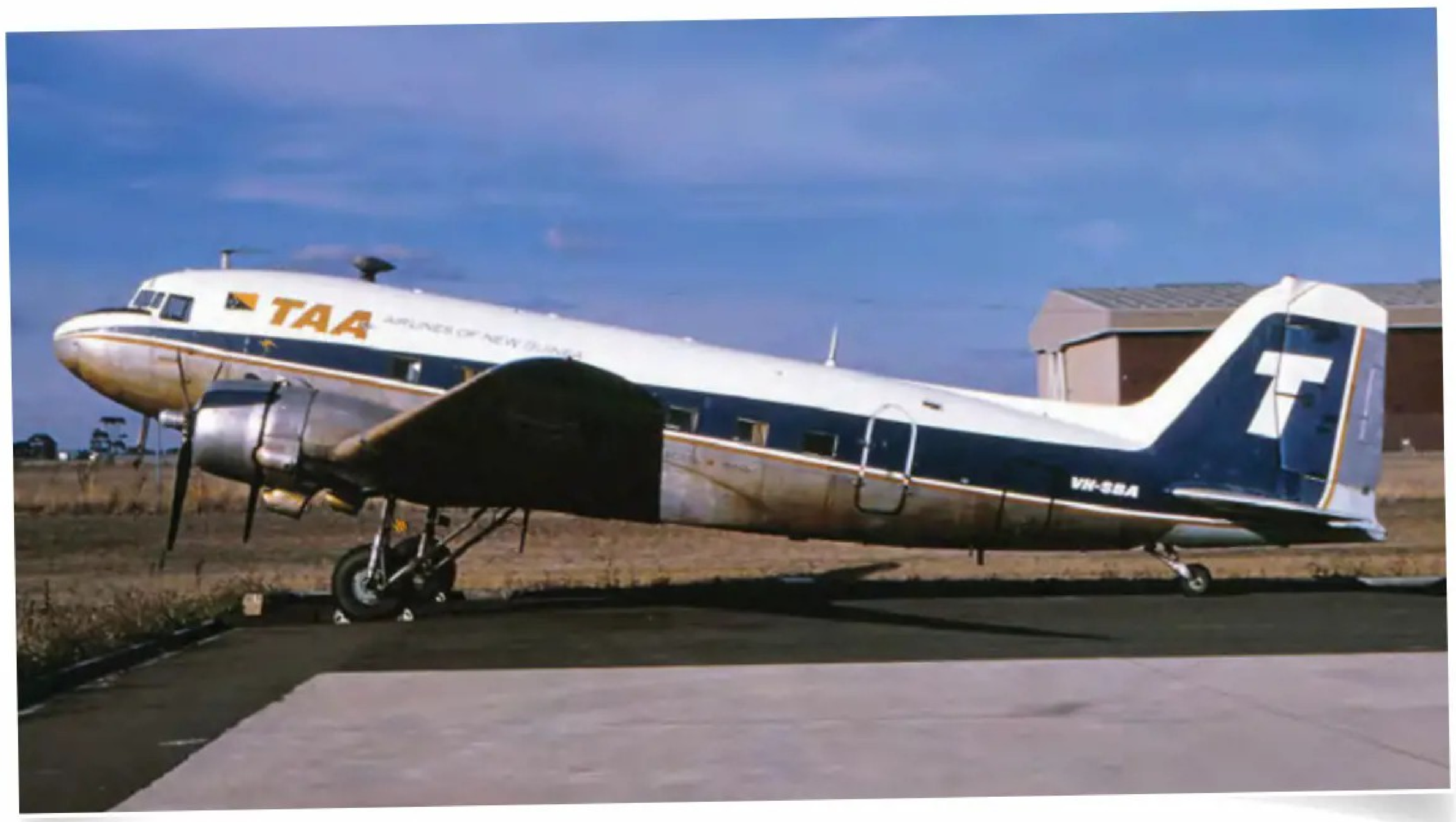


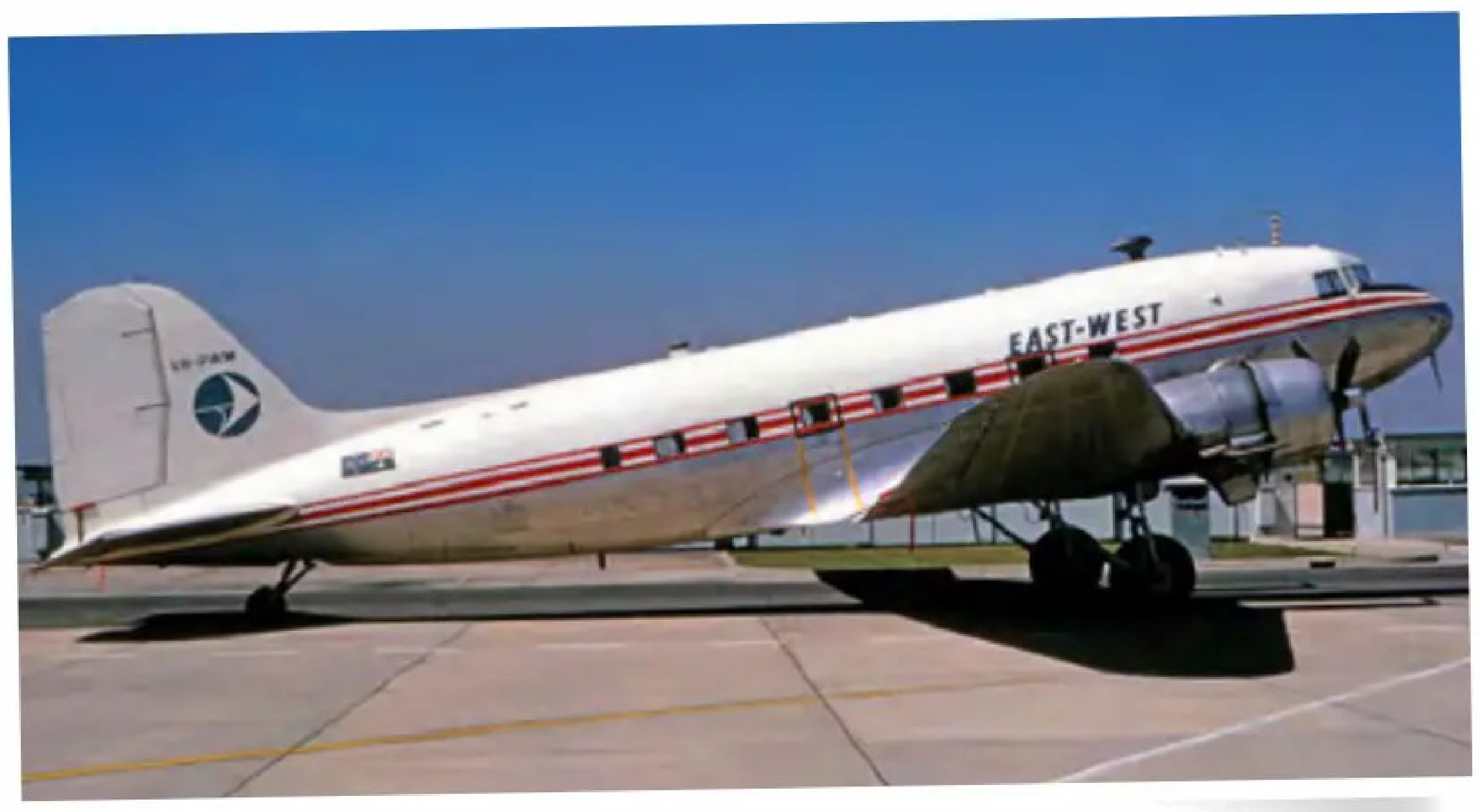
LEFT:
A significant DC-3 was c/n 4423 which, as VR-HDB, was the first aircraft to operate in Cathay Pacific colours when the airline began operations. At the time this picture was taken it was VH-MAL with BPA (Bush Pilots Airways), based at Cairns in the far north of Queensland to undertake both passenger and freight charters in the region.

BELOW:
Originally built for the US Army Air Forces as a C-47A with serial 42-92806, VH-MAN (c/n 12647) of Mandated Airlines is parked at Wau, Papua New Guinea during 1958.

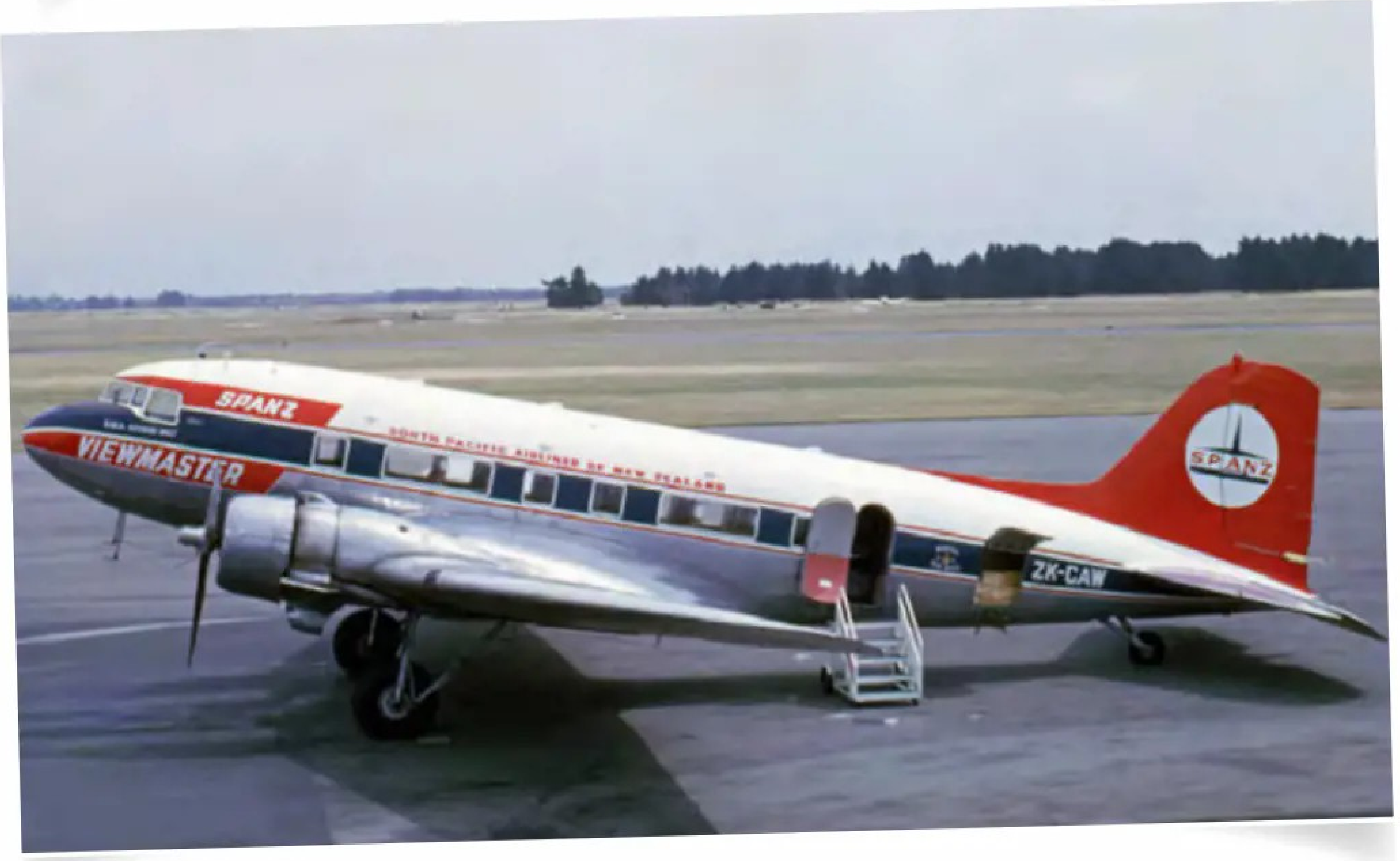


RIGHT: With Airlines of New Guinea titles but in basic TAA colours, VH-SBA (c/n 6021) was withdrawn in July 1973 and re-registered as VH-AES. Restored to flying condition, it's operated by HARS (the Historical Aircraft Restoration Society) at Shellharbour Airport, 60 or so miles south-west of Sydney.

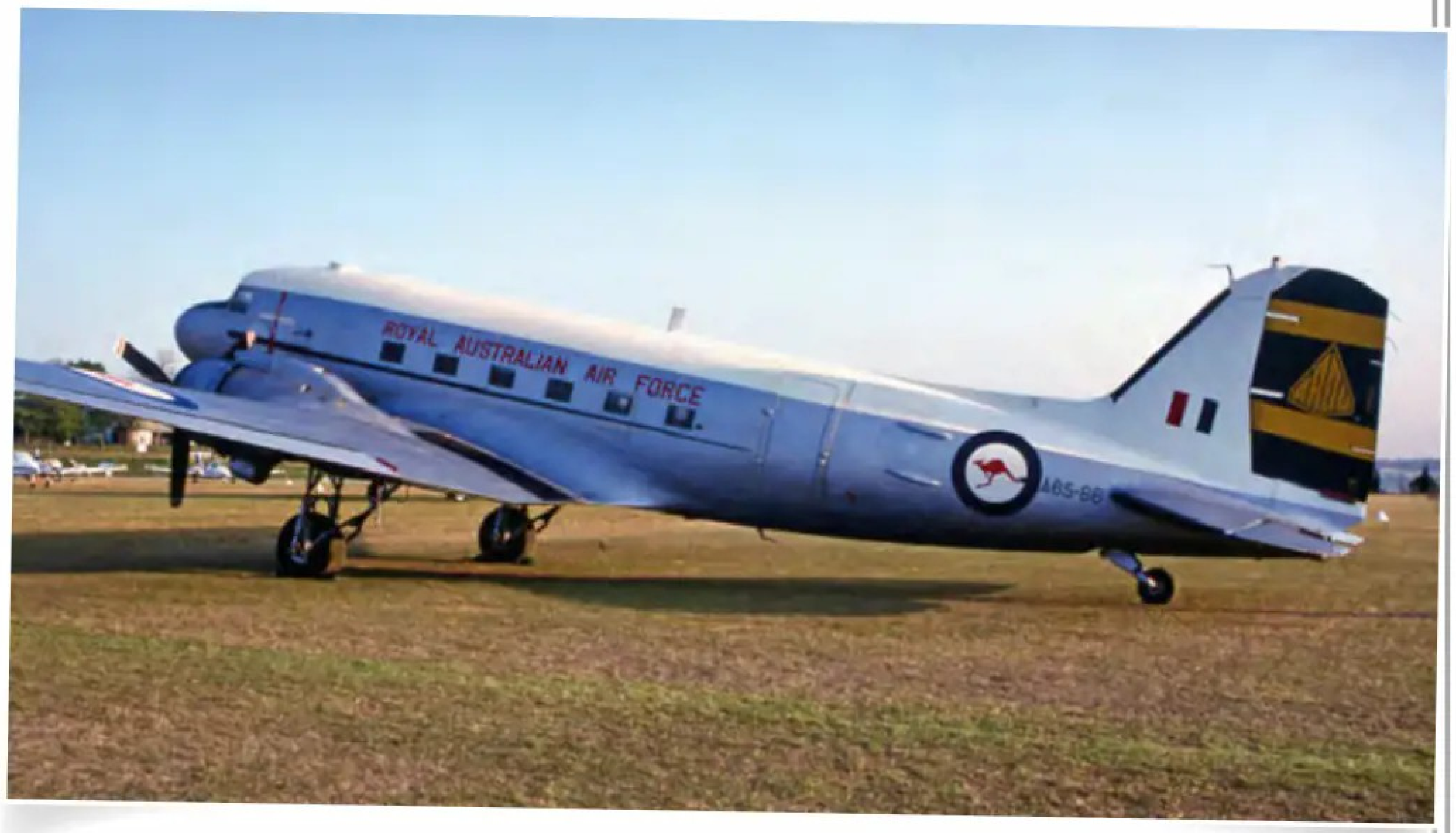

TAA
AIRLINES OF NEW GUINEA
VH-SBA


EAST-WEST
VH-PWM

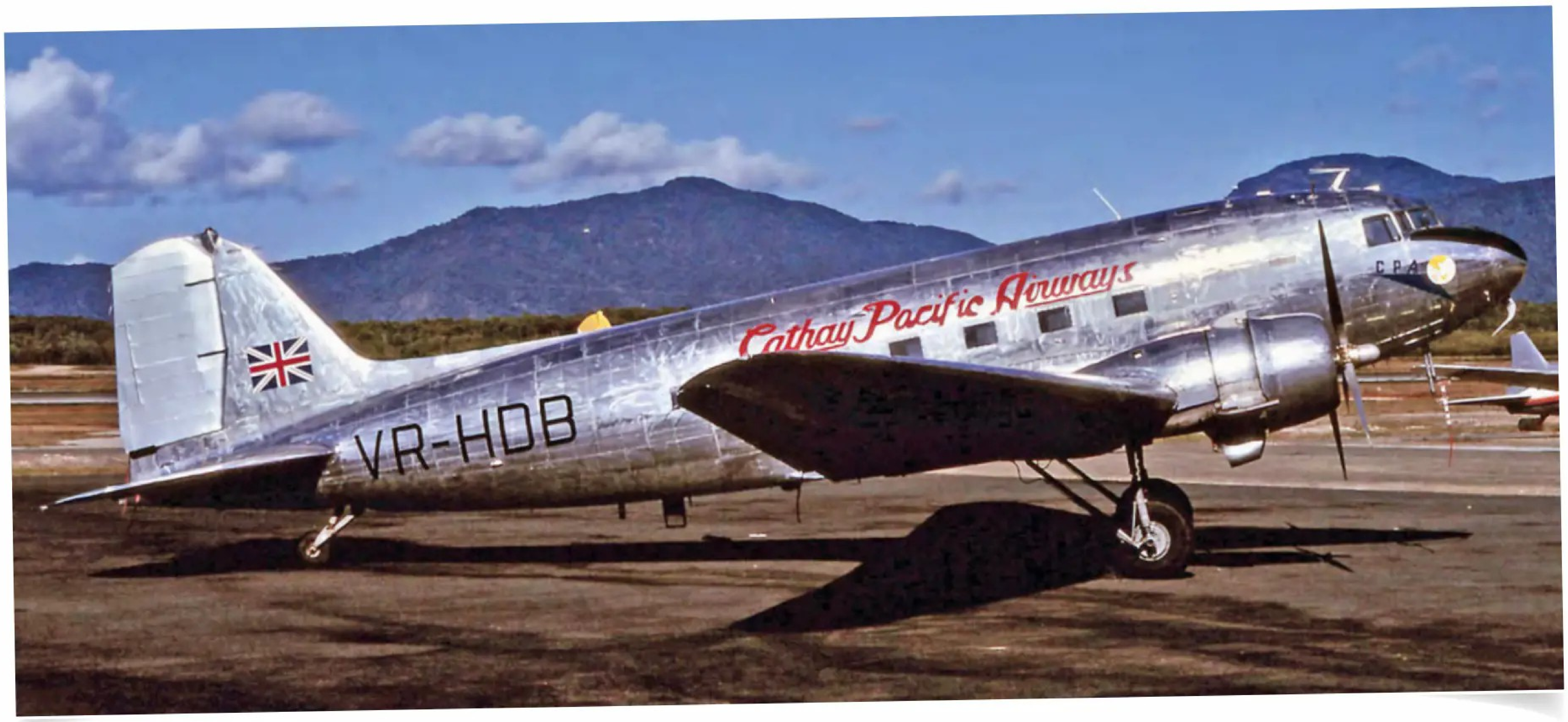
LEFT: East-West Airlines' VH-PWM (c/n 11970) in the storage area at Melbourne's Essendon Airport, where, with permission from the tower, you could wander all around the stored DC-3s and Bristol 170 Freighters. This aircraft was retired in Harare in 1996.


SPANZ
VIEWMASTER
SOUTH PACIFIC AIRLINES OF NEW ZEALAND
ZK-CAW
SPANZ

ABOVE: South Pacific Airlines of New Zealand purchased c/n 18923 in August 1961. Registered ZK-CAW, it was named *RMA George Bolt*. This DC-3's final flight took place with Fieldair during 1984 and it ended its days as part of a McDonald's restaurant in Taupo.


ROYAL AUSTRALIAN AIR FORCE
A65-86

ABOVE: C-47B A65-86 (c/n 32879/16131) with the Royal Australian Air Force's Aircraft Research and Development unit based in Edinburgh, South Australia. It can today be seen preserved at the Amberley Aviation Heritage Centre.


Cathay Pacific Airways
VR-HDB

The same machine as shown on the previous page in use with BPA, c/n 4422 was christened *Betsy* while in service with Cathay Pacific as VR-HDB. It saw service in Australia with several airlines until Cathay repurchased the machine to go on display at the Hong Kong Science Museum. Repainted in the carrier's first livery, it visited Cairns while awaiting delivery for preservation.

Have you got photos to contribute to Personal Album? If so, e-mail the editor at ben.dunnell@keypublishing.com

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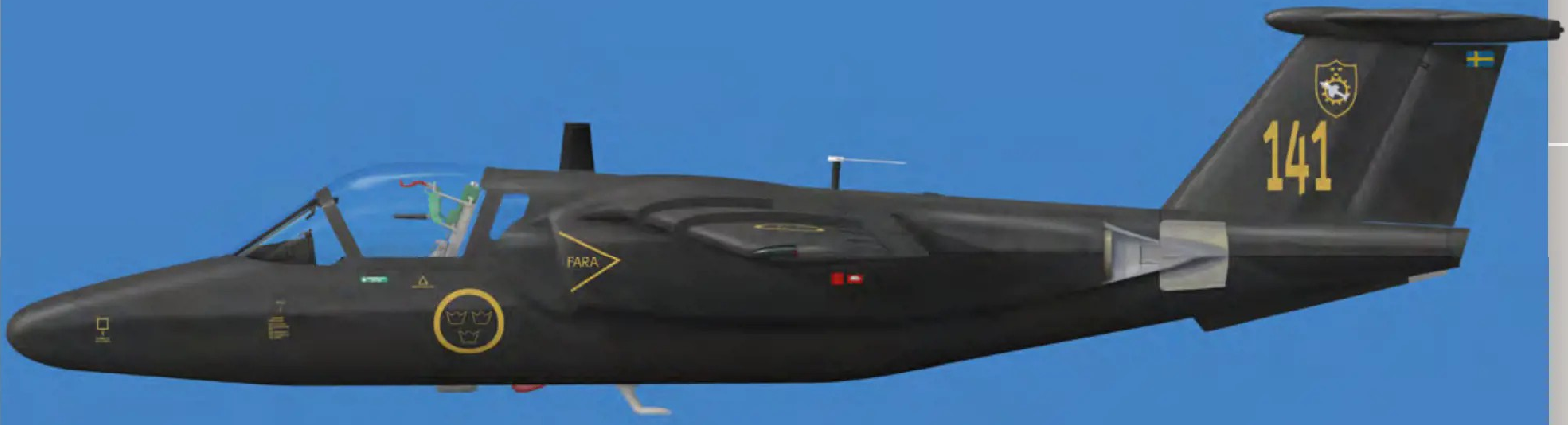
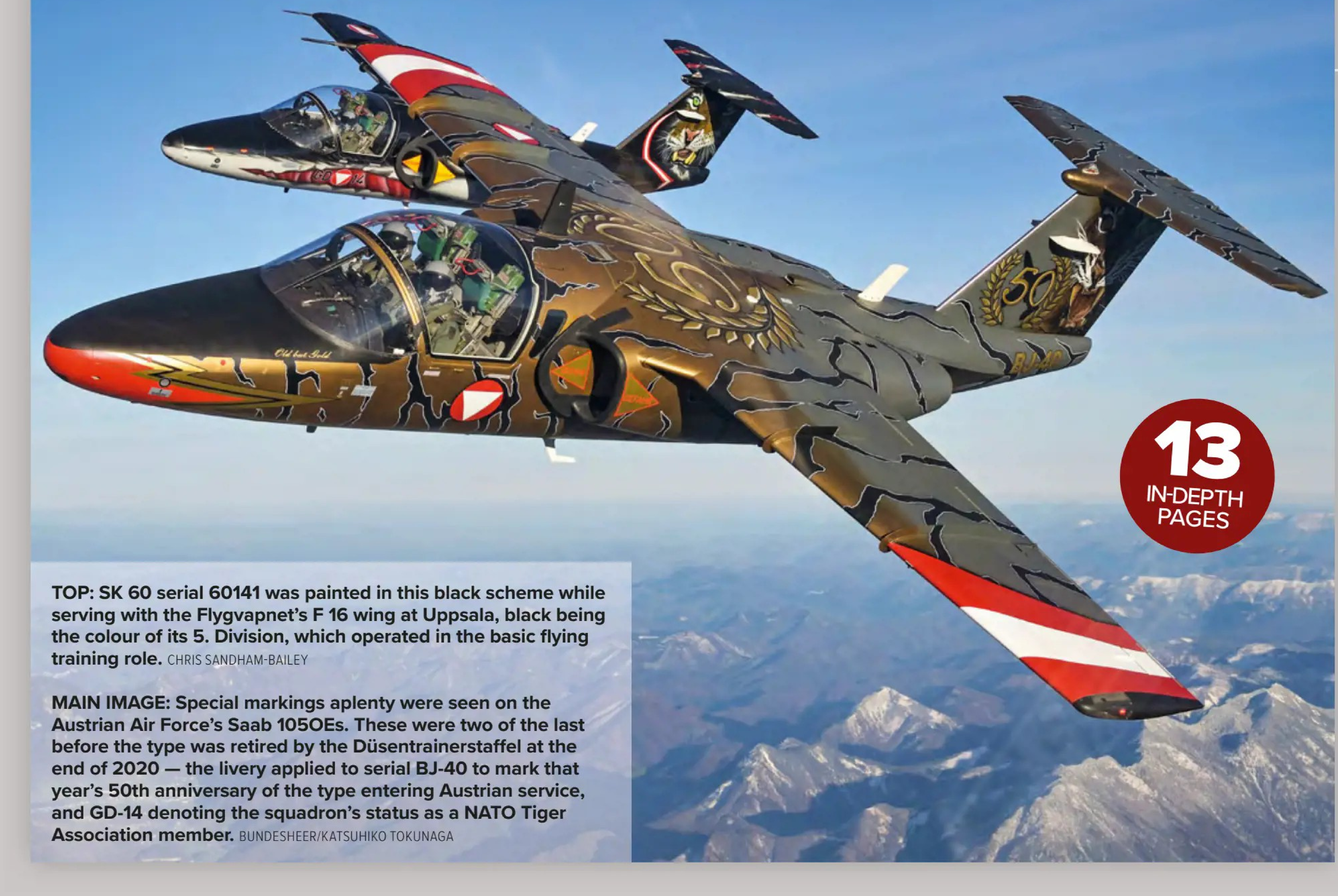


SAAB 105

WORDS: JAN FORSGREN

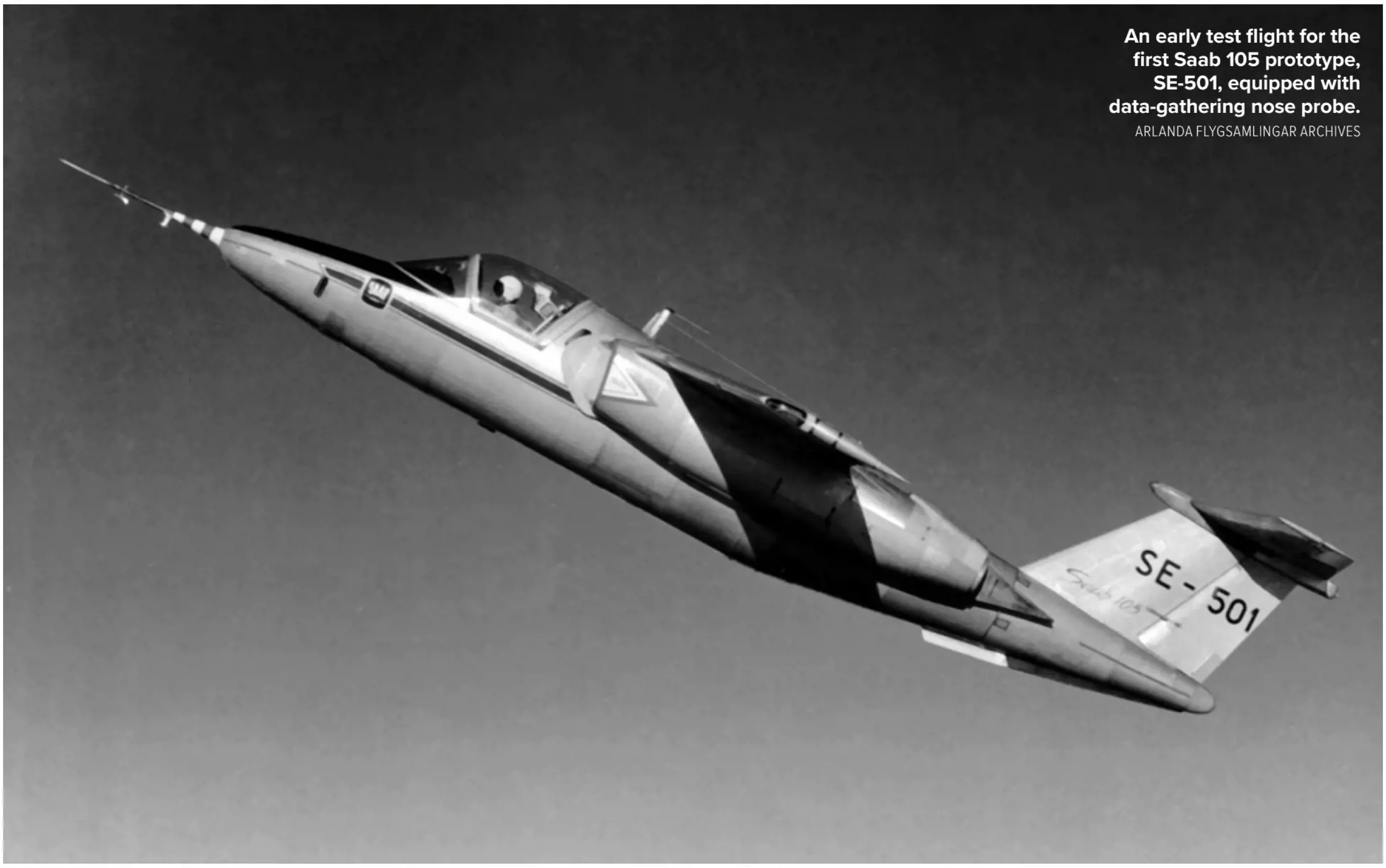


13 IN-DEPTH PAGES

TOP: SK 60 serial 60141 was painted in this black scheme while serving with the Flygvapnet's F 16 wing at Uppsala, black being the colour of its 5. Division, which operated in the basic flying training role. CHRIS SANDHAM-BAILEY

MAIN IMAGE: Special markings aplenty were seen on the Austrian Air Force's Saab 105OEs. These were two of the last before the type was retired by the Düsentrainerstaffel at the end of 2020 — the livery applied to serial BJ-40 to mark that year's 50th anniversary of the type entering Austrian service, and GD-14 denoting the squadron's status as a NATO Tiger Association member. BUNDESHEER/KATSUHIKO TOKUNAGA

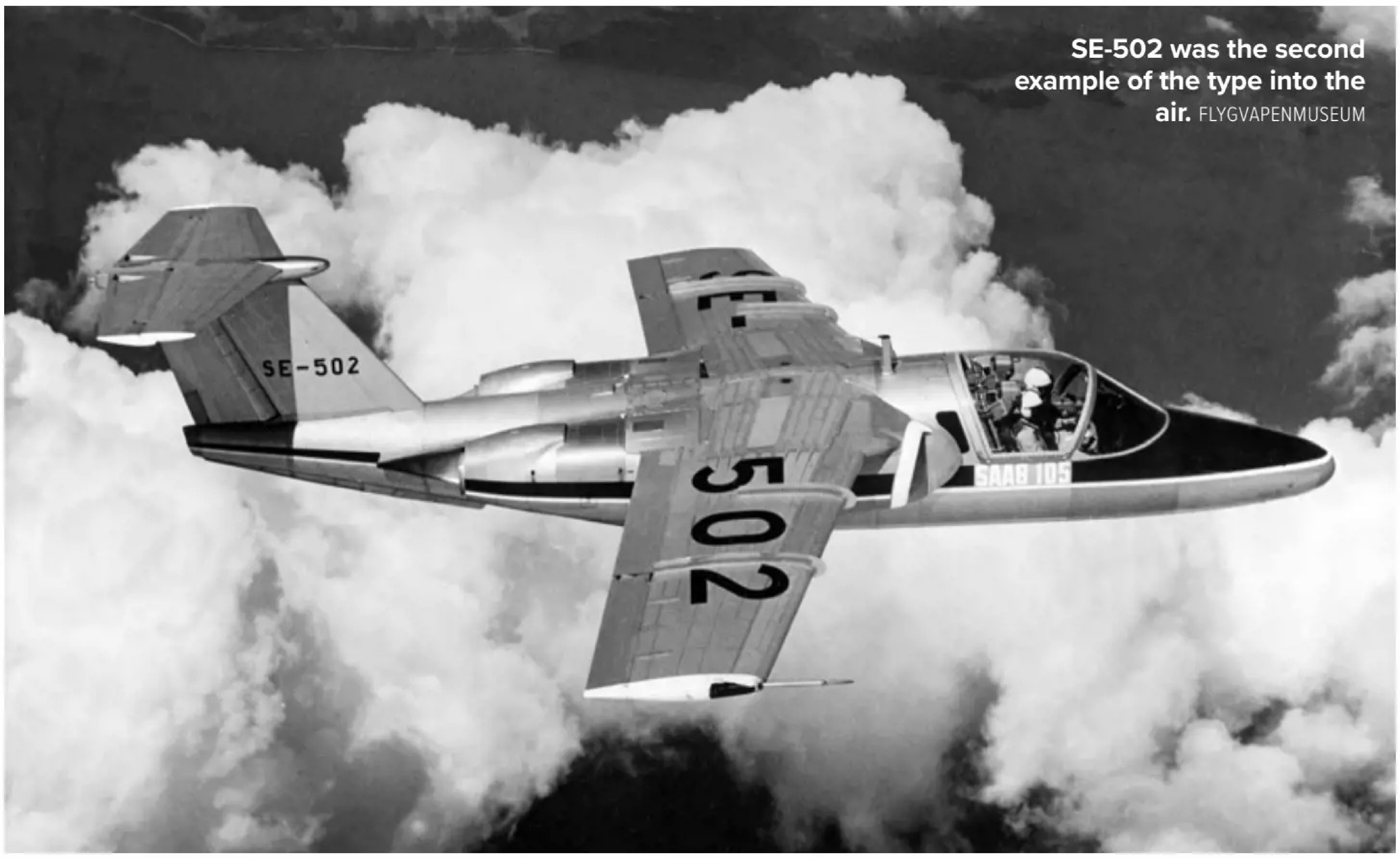
Sweden's selection of a Saab product as its new jet trainer was no foregone conclusion

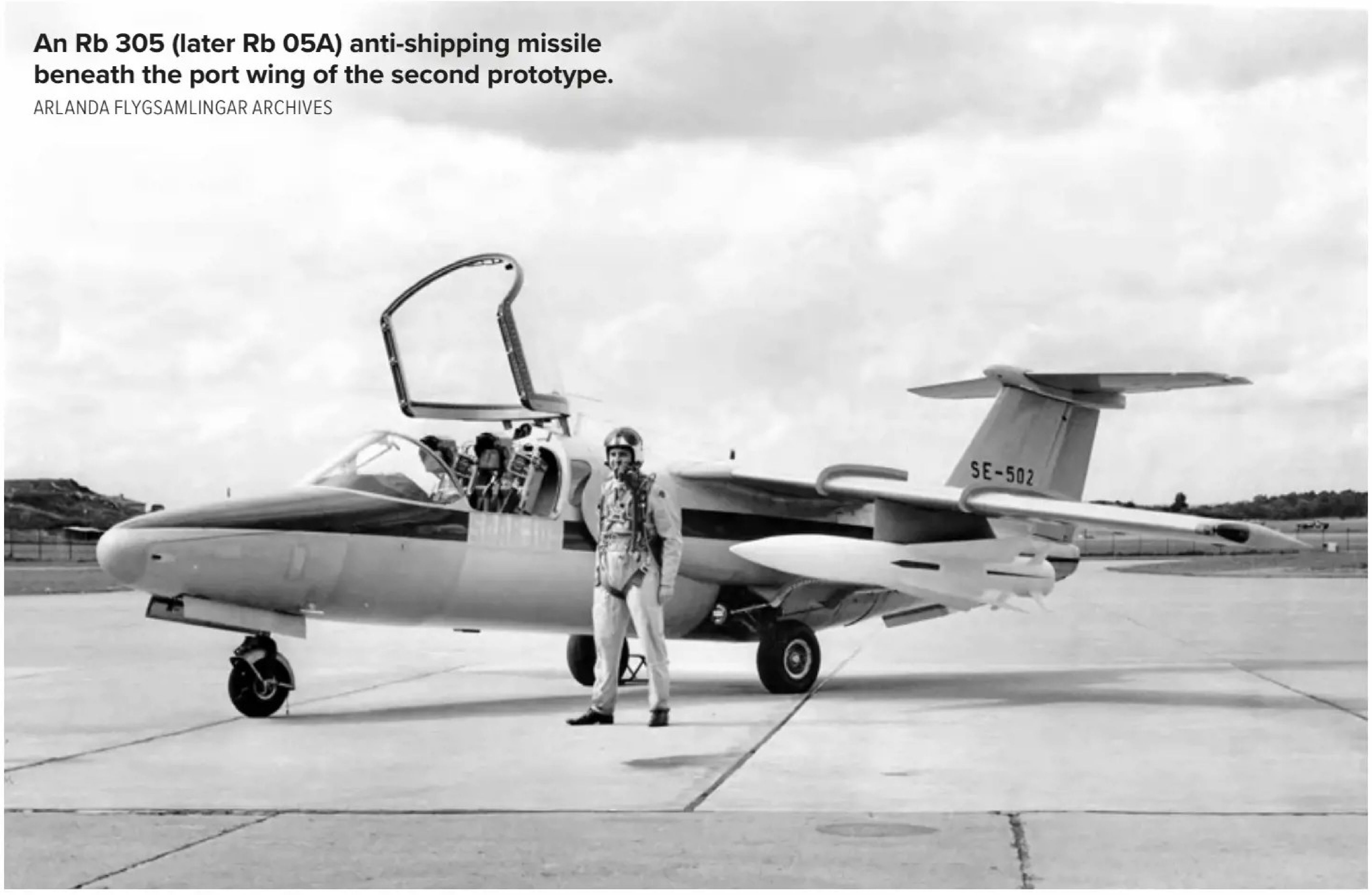

An early test flight for the first Saab 105 prototype, SE-501, equipped with data-gathering nose probe. ARLANDA FLYGSAMLINGAR ARCHIVES

The genesis of the Saab 105 can be traced to a Flygvapnet (Swedish Air Force) requirement to replace the DH115 Vampire T55 basic jet trainer, locally designed J 28C. Between 1957 and 1962 several aircraft were evaluated, including the BAC Jet Provost, Canadair CL-41, Fouga Magister, Morane-Saulnier MS760 Paris and Aermacchi MB326. Saab thought about obtaining a production licence for the Magister, just in case it was selected by the Kungliga Flygförvaltningen (KFF, Royal Air Board) and the Flygvapnet.

The Swedish manufacturer had looked at the executive aircraft market, a twin-engine development of the Saab 91 Safir, the Saab 94, being briefly considered. However, it appeared as if this niche was already saturated. In May 1958 Erik Bratt, who had designed the delta-wing Draken fighter, put forward a twin-engine delta project, the Saab 220, intended for dual purposes as a basic jet trainer and a four to six-seat business jet. Engines considered were the Turbomeca Gourdon or Marboré. Looking like a cross between the Saab 210 research aircraft and the Gloster Javelin, the Saab 220 had a projected cruising speed of 800km/h and a range of 2,000km. Another contemporary project was a delta-winged Saab 105, one proposal having canard foreplanes, but the delta configuration was unsuitable for a basic jet trainer.

Although Saab had become the main supplier of aircraft to the Flygvapnet, it was not taken for granted that its own private-venture offering would be selected. A shoulder-wing design was put forward in February 1960. This included side-by-side seating, a low-mounted stabiliser and twin engines buried in the fuselage. Two months later, Ragnar Härdmark was appointed as project manager for the new aircraft. Apart from training


SE-502 was the second example of the type into the air. FLYGVAPENMUSEUM



An Rb 305 (later Rb 05A) anti-shipping missile beneath the port wing of the second prototype. ARLANDA FLYGSAMLINGAR ARCHIVES

purposes, Saab foresaw other possible uses including an executive jet for up to five passengers, civilian flight training, air ambulance and aerial survey.

A large scale model of the Saab 105 was displayed at the 1961 Paris Air Show. By the end of June the basic configuration was in place, which involved side-by-side seating for two pilots, two engines, a T-tail and slightly swept-back, anhedral wings. Initially, the Turbomeca Marboré turbofan was considered. One advantage was that the Marboré was already in use on a number of different aircraft, most notably the Magister and Paris.

A prototype was ordered on 16 December 1961, and there would be work "to continue development of the Saab 105 trainer to be used for attack purposes as well". The ground attack requirement also resulted in the runner-up for the Flygvapnet order, the Canadair CL-41, being rejected. The main argument against it was the low-wing configuration causing expected difficulties in carrying external loads beneath the wings. Although the Canadian aircraft — designated CT-114 Tutor — were unarmed, the 20 CL-41Gs sold to Malaysia did carry armament on six underwing pylons.

Construction of two prototypes of the Saab machine was initiated in early 1962, these being designated as the 105-1 and 105-2. A preliminary contract signed that April by the KFF and Saab covered the supply of 130 aircraft, with the proviso that they had to live up to the specification in forthcoming flight trials.

With the secondary light attack capability being added to the KFF specification, it was deemed that the Marboré lacked the necessary power. In its place, another Turbomeca design, the Aubisque turbofan, was selected. Interestingly, the Aubisque had originally been developed for use as a gas generator on the Turbomeca Bastan. Flight trials with it began on a French Canberra. In the event, the 105 was the only aircraft to be powered by the Aubisque, a total of 300 engines being built. In Flygvapnet service, the Aubisque was designated as the Volvo RM9B.

Work proceeded rapidly, the first prototype making its maiden flight on 29 June 1963, with Saab test pilot Karl-Erik Fernberg at the helm. Fernberg wasn't entirely pleased with the flying characteristics, the lack of stability in yaw being a source of concern. These problems were addressed through wind tunnel trials and flight tests by adding a small ventral fin.

> ***"It was the only aircraft to use the Aubisque"***

The second Saab 105 prototype took to the air on 17 June 1964. Registered to begin with as SE-501 and SE-502, the identities of the first aircraft were soon changed to SE-XBY and SE-XBZ. They were used for extensive flight handling and engine trials, the latter being conducted primarily in France. A revised nose section, which was intended to carry a camera, was evaluated too.

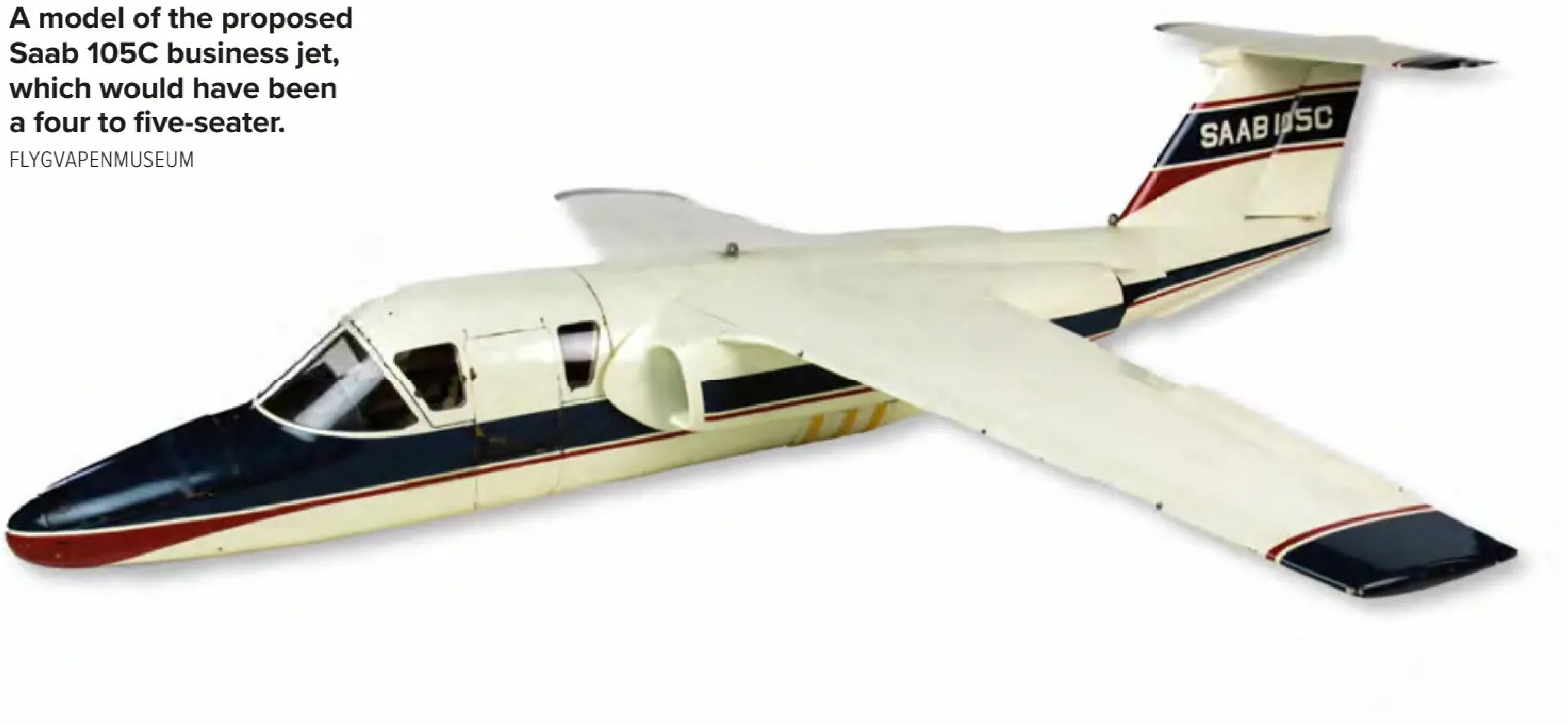
The preliminary KFF contract was amended on 6 March 1964 to a firm contract worth SEK 156 million, covering the delivery of 130 training aircraft, as well as an option — later firmed-up — for an additional 20. At this stage it was estimated that the type would have a service

The FC codes worn by SK 60s 60001, the first production machine, and 60003 denote their initial allocation to the Försökscentralen, the Flygvapnet's experimental flight test centre. SAAB life of 3,500 flight hours in the training role.

An accident during inverted spin trials on 17 June 1966 claimed the first prototype, but pilot Eric Sjöberg ejected safely. The second, 105-2, went on to be progressively upgraded and modified to varying configurations, including the 105XT (export trainer).

The first series-produced SK 60 — this being the 105's Flygvapnet designation, in which SK is short for Skolflygplan (training aircraft) — was flown on 27 August 1965. Construction proceeded rapidly, all 150 SK 60s being delivered between 1966 and early 1969 with the production rate eventually reaching six aircraft per month. Serial numbers ran from 60001 to 60150.

Although most Saab types received names, such as Draken and Viggen, the 105 never did. This was not due to a lack of trying, though, a 1969 contest suggesting several different names including Delfin (Dolphin), Kadett (Cadet), Lansett (Lancet) and Gladan (Red Kite). Although the Flygvapnet leaned towards the name Gladan, the aircraft was known simply as the SK 60.



A model of the proposed Saab 105C business jet, which would have been a four to five-seater. FLYGVAPENMUSEUM

Projects

Apart from its primary job as a basic trainer, Saab saw considerable development potential in the 105. It proposed the aircraft's use as an air ambulance, with space on board for a stretcher and an accompanying medic, and as a photo survey platform.

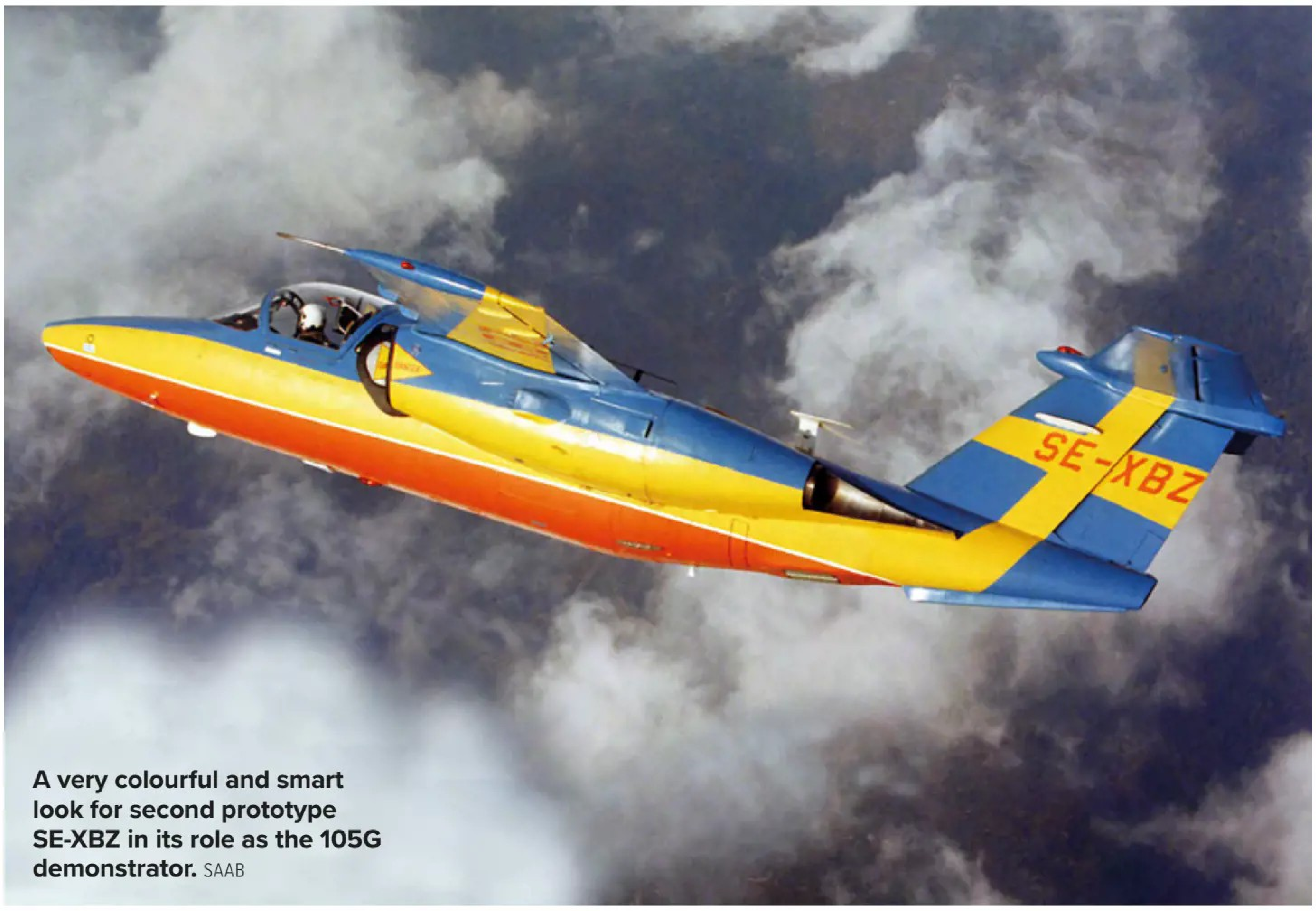
In 1964 two executive jet variants, the Saab 105C and 106, were considered. The 105C was a four to five-seat aircraft featuring a slightly longer fuselage and increased wingspan, resulting in improved take-off, rate of climb and landing characteristics. An entrance door was to be installed on the port side of the front fuselage, while the leading edge of the wings, stabiliser and air intakes would have had de-icing gear.

The slightly larger 106 was to carry six to seven people. Two models were planned, the 106A with Turbomeca Aubisque engines and the 106GE powered by General Electric J85s, the latter turbofans increasing the 'hot and high' performance at the cost of reduced range. Both the 105C and the 106 remained on the drawing board.

With the aim of securing foreign orders, during 1967 the 105-2 was fitted with General Electric J85 turbofans. Designated as the 105XT (export trainer), in this form it had an increased fuel load and greater all-up weight. Apart from various armament options, the 105XT underwent extensive target-towing and camera pod trials. The only customer for it, however, was Austria (see pages 83-85).

The 105XT prototype was later modified as the 105G (ground attack) variant, with more comprehensive avionics, navigation, air data, armament and sighting systems. First flown in 1972, the 105G had a maximum weight of 6,500kg and could carry external loads of 2,350kg, albeit with a reduced fuel load as a consequence. Following a display at Farnborough on 7 September 1972, the pilot inadvertently performed a belly landing; following repairs, the 105G resumed its test-flying schedule about a month later. No export customers could be found and its last flight took place on 29 October 1982.

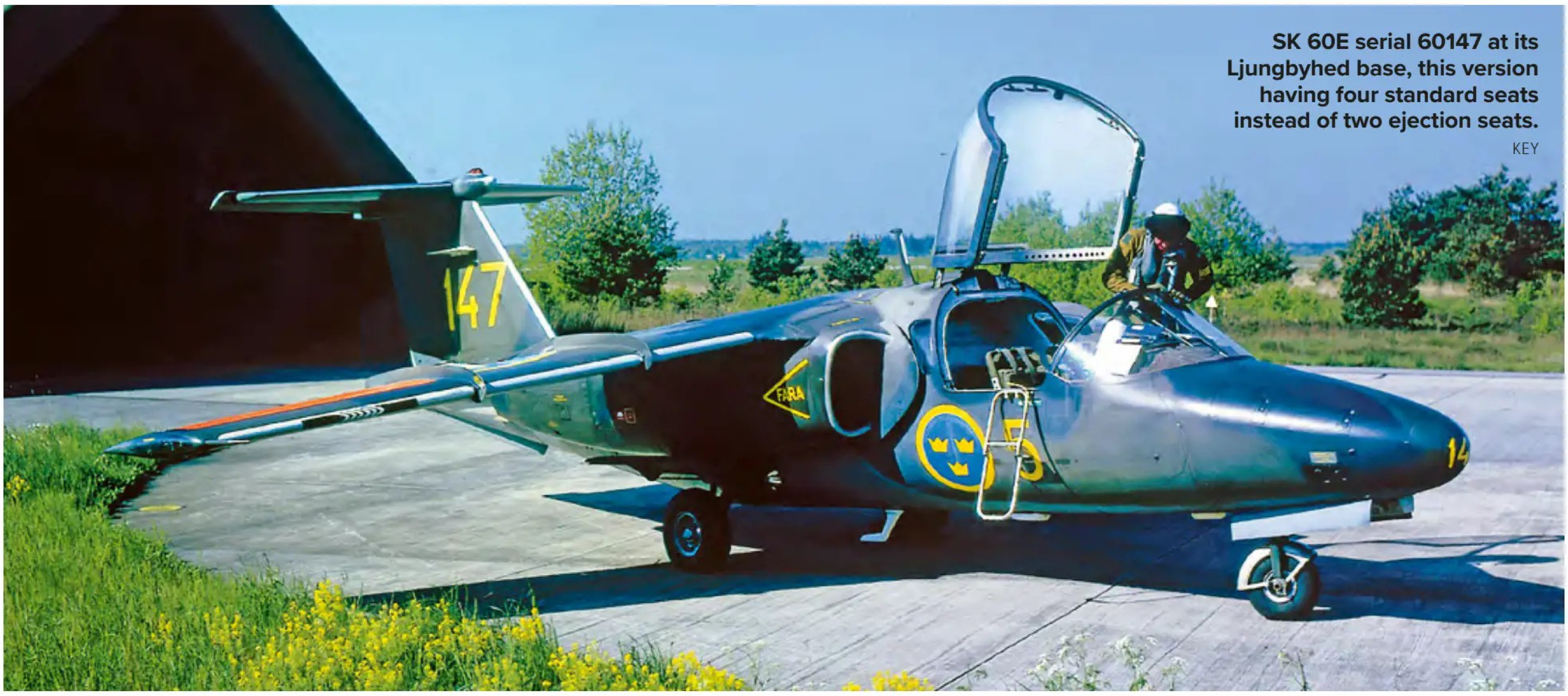
By the mid-1980s the RM9B engines were becoming increasingly maintenance-heavy and expensive to run, a study regarding the installation of new powerplants on the existing SK 60s being initiated. SK 60A 60134 was selected as the ground trials airframe, with the Turbomeca-SNECMA Larzac 04C6, Pratt & Whitney JT15D-4 and JT15D-5, General Electric J85-17B (fitted to the Austrian 105OE), Garrett F109 and Williams-Rolls FJ44 being evaluated. The re-engined variant was to be designated SK 60F. It was never realised, serial 60134 being modified as the Saab 2060, which is outlined on page 85.



A very colourful and smart look for second prototype SE-XBZ in its role as the 105G demonstrator. SAAB

TECHNICAL DETAILS

The essentials of the 105's design and construction



SK 60E serial 60147 at its Ljungbyhed base, this version having four standard seats instead of two ejection seats. KEY

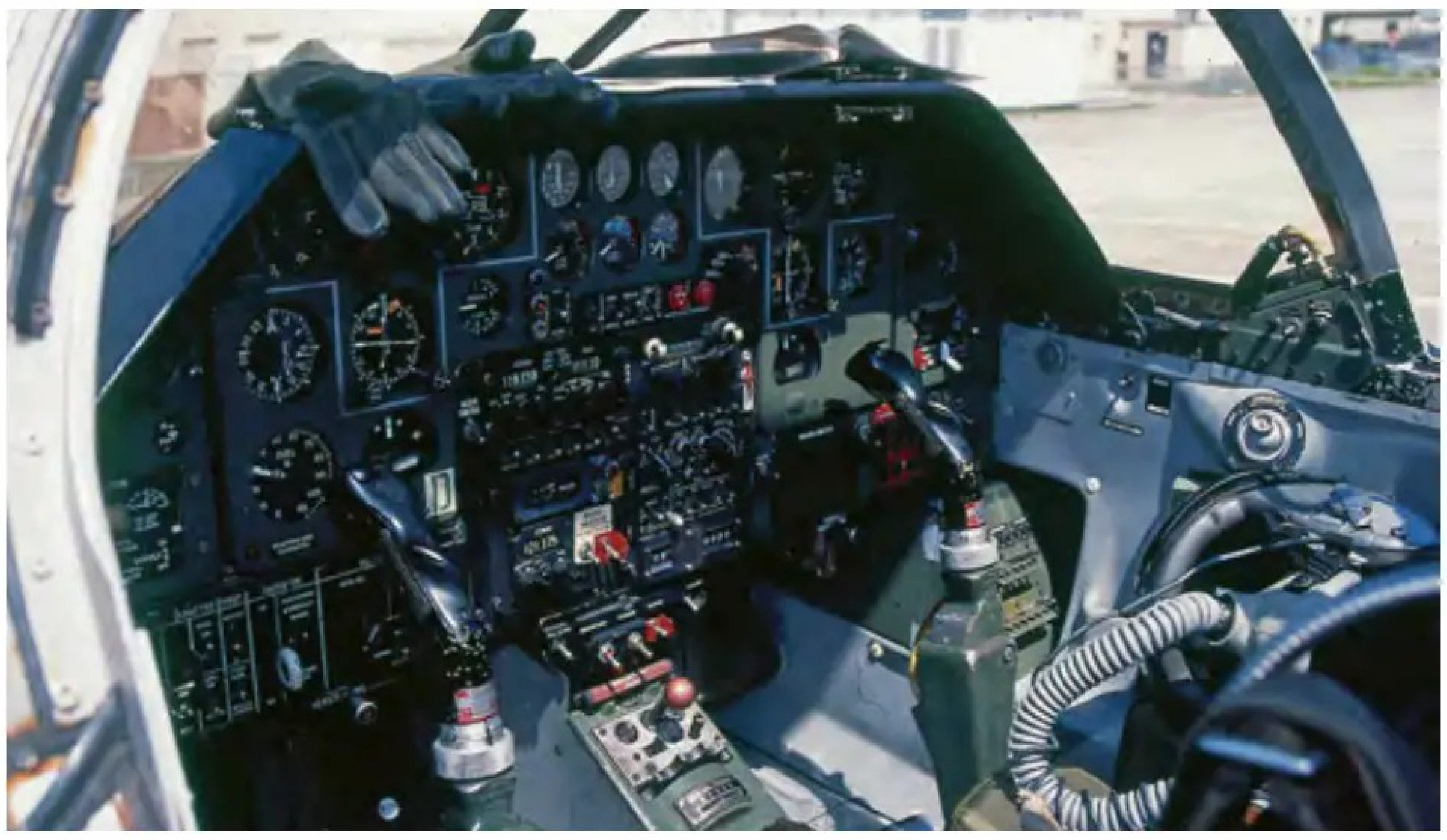
The 105's fuselage was an all-metal, stressed-skin monocoque. The forward fuselage contained the nose section, nosewheel and pressurised cabin. The centre fuselage, onto which the wing was mounted, included two fuel tanks, air intakes, both engines and nacelles, the main undercarriage and airbrakes. Twin perforated airbrakes pivoted into transverse slots in the lower rear fuselage. A luggage compartment of 42kg capacity was incorporated into the port side.

The wings had a one-piece stressed-skin structure, with two continuous main spars. They had 12° of sweepback and 6° of anhedral. Built from bonded honeycomb, the ailerons, fin and elevators were statically and aerodynamically balanced. Both ailerons had geared servo-tabs, the starboard tab being mechanically adjustable for trimming. The single-slotted flaps were of bonded honeycomb, as were the fin and elevators. The rudder and elevators had electronically operated trim tabs. A ventral fin doubled as a tail bumper.

There were four integral fuel tanks, two fuselage tanks (total capacity 920 litres) and two wing tanks (total capacity 480 litres) for an overall 1,400 litres. Each of the fuselage tanks included a dorsal tank with associated pump, which allowed for about 15 seconds of inverted flight.

All flight instruments were duplicated. Blind-flying instruments were standard, with room for an optional second panel on the starboard side. Provision was made for two VHF and two ADF units as well as ILS or VOR.

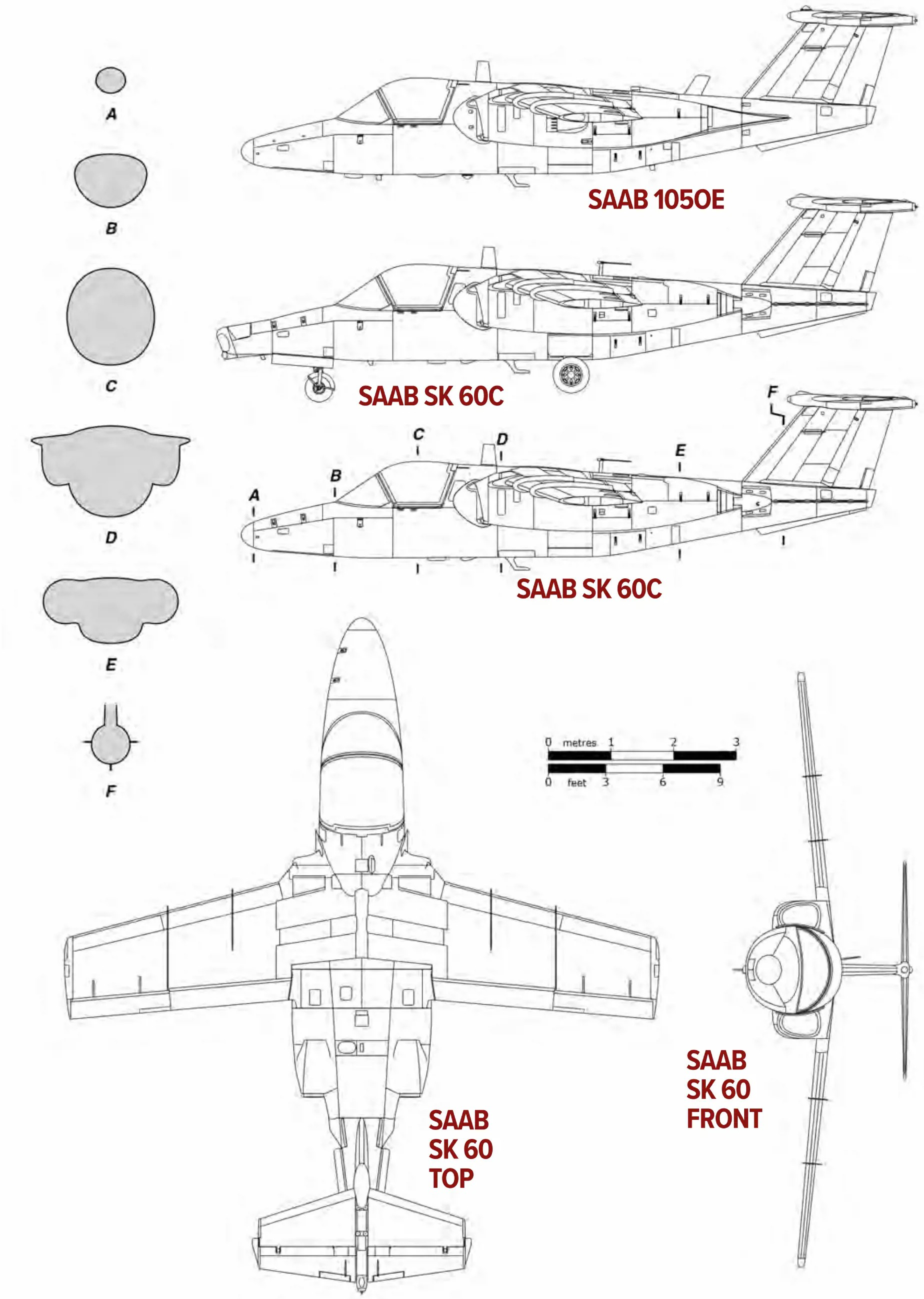
In the cockpit, beneath a rearward-hinged canopy were two side-by-side ejection seats for an instructor and pupil, dual controls being standard. The ejection seats could be replaced with four fixed seats, two in the front and two to the rear.



The cockpit of an Austrian 105OE model in 1997. KEY/DUNCAN CUBITT

DATAFILE **SAAB 105/SK 60**

	SK 60A	SK 60 (re-engined)	105OE
POWERPLANTS			
	Two Turbomeca Aubisque (Volvo RM9) turbofans, 1,636lb (742kg) st thrust each	Two Williams-Rolls FJ44-1C (Volvo RM15) turbofans, 1,867lb (847kg) st thrust each	Two General Electric J85-17B turbojets, 2,851lb (1,293kg) st thrust each
DIMENSIONS			
Wingspan:	31.2ft (9.5m)	31.2ft (9.5m)	31.2ft (9.5m)
Length:	35.4ft (10.8m)	35.4ft (10.8m)	35.4ft (10.8m)
Height:	8.9ft (2.7m)	8.9ft (2.7m)	8.9ft (2.7m)
Wing area:	175.5 sq ft (16.3 sq m)	175.5 sq ft (16.3 sq m)	175.5 sq ft (16.3 sq m)
PERFORMANCE			
Maximum speed:	478mph (770km/h)	478mph (770km/h)	603mph (970km/h)
Service ceiling:	39,370ft (12,000m)	44,948ft (13,700m)	42,979ft (13,100m)
Range:	746 miles (1,200km)	1,429 miles (2,300km)	1,491 miles (2,400km)
WEIGHTS			
Empty:	6,343lb (2,877kg)	6,343lb (2,877kg)	6,647lb (3,015kg)
Maximum:	9,921lb (4,500kg)	14,330lb (6,500kg)	14,330lb (6,500kg)
ARMAMENT			
Two 30mm ADEN cannon pods, 13.5cm or 7.5cm high-explosive rockets, 6.0 or 6.3cm practice rockets			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SAAB 105OE

SAAB SK 60C

SAAB SK 60C

SAAB SK 60 TOP

SAAB SK 60 FRONT

IN SERVICE

Both Sweden and Austria used the 105 for much more than just the training role

F 5 Ljungbyhed began receiving early-production SK 60s like these in 1967. ARLANDA FLYGSAMLINGAR ARCHIVES

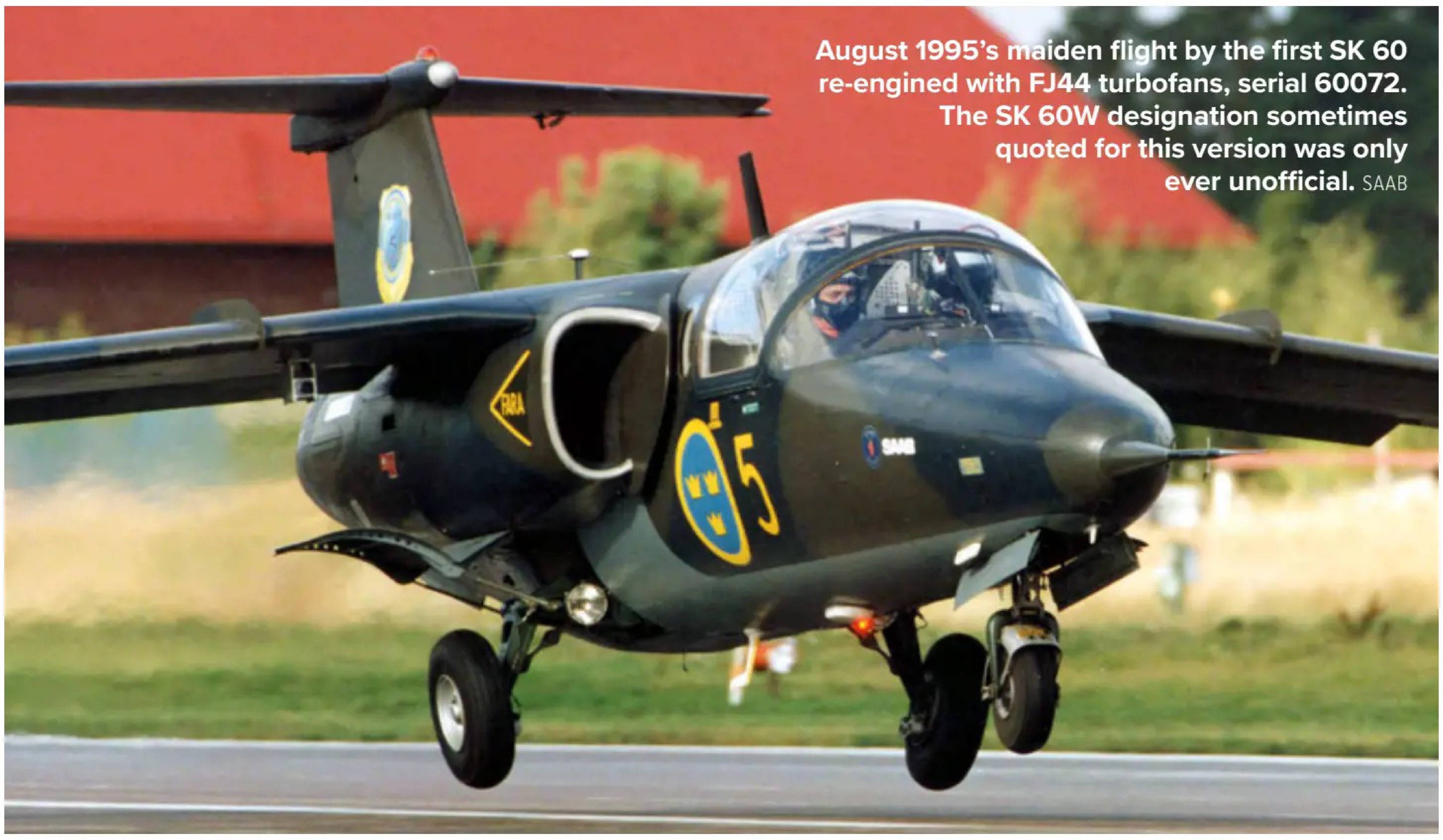
On 17 July 1967, the SK 60 formally entered service with the Flygvapnet's flight training wing at F 5 Ljungbyhed. Due to the engine note, it soon became known as the 'Dammsugaren' (vacuum cleaner). Student pilots initially flew 30 hours on the Saab 91B Safir (SK 50B), followed by 130 hours on the SK 60. The Safirs were replaced by the Scottish Aviation Bulldog (SK 61) in 1972-73. Introductory screening on piston-engine trainers was abolished from 1987, meaning student pilots completed their entire flight training syllabus on the SK 60. This included a total of 125 flying hours, including 40 hours of solo time. A first solo usually occurred after some 25 hours.

The SK 60 was also used by the cadet school at F 20 Uppsala. Prior to graduation, the cadets usually performed one flight abroad, Britain, Belgium, Italy and the Netherlands being among the countries visited, until organisational changes brought an end to these SK 60 sorties during 1981.

Until 1970, the aircraft was known simply as the SK 60. That year, modification work began which eventually resulted in five distinct variants, from the SK 60A to the SK 60E. The one used at Ljungbyhed was the unarmed, unmodified, SK 60A basic two-seat trainer. The SK 60B and C were ground attack versions with six underwing pylons and a Ferranti GGS Mk1-VE9 sight on the left-hand side of the instrument panel.

Armament options consisted of two 30mm ADEN cannon pods with 150 rounds each, 12 13.5cm high-explosive rockets, six 14.5cm armour-piercing rockets or two RB 05A anti-shipping missiles. The latter were rarely used, being discontinued in 1982. One reason was that the pilot would have to fly in a straight line after firing the missile, thus being exposed to enemy fire. For training purposes, two 12.7mm machine gun pods with 100 rounds per gun could be carried, as well as 6.0 or 6.3cm practice rockets. To simulate hits from anti-aircraft artillery, two reflector units reflected lasers fired from the ground. Trials with 250kg and 120kg bombs were conducted, but they were not adopted.

A pair of re-engined SK 60s operated during 2017 by the Flygskolan at Malmen. ALAMY



August 1995's maiden flight by the first SK 60 re-engined with FJ44 turbofans, serial 60072. The SK 60W designation sometimes quoted for this version was only ever unofficial. SAAB

There were 45 SK 60Bs, with serials 60034-60039, 60041, 60042, 60044-60046, 60048-60050, 60054-60060, 60063-60077, 60080, 60083, 60085, 60086 and 60089-60091. Essentially similar was the SK 60C, the main external difference being the panoramic SKa 29 (Fairchild FB-18) camera in the nose. Serials for the 30 SK 60Cs were 60001-60007, 60009-60028 and 60030-60032. The slightly elongated nose resulted in the SK 60C being nicknamed 'Myrsloken' (anteater).

Five light attack squadrons were formed, each having 12 SK 60B/Cs, three reserve aircraft and one SK 60A for fast transport duties. Apart from the ground attack mission against targets such as bridges, vehicles and troop concentrations, these units were also intended to intercept and shoot down helicopters and transport aircraft, the Soviet Mi-24 'Hind' being considered to constitute a major risk for army units in northern Sweden. The light attack SK 60 crews (pilot and navigator) usually operated at extreme low level. According to the safety procedures, the minimum altitude was 50m. For shorter, pre-planned sorties, flights at 20m over land and 10m over sea were considered normal. Simulated attacks against Soviet ZSU-23-4 anti-aircraft guns as well as SA-6 'Gainful' and SA-9 'Gaskin' missiles were conducted at a Swedish target range. According to the post-mission report, the ZSU-23-4 guns were only able to fire at the SK 60s on three occasions. The light attack squadrons were disbanded in 1997 as a cost-saving measure.

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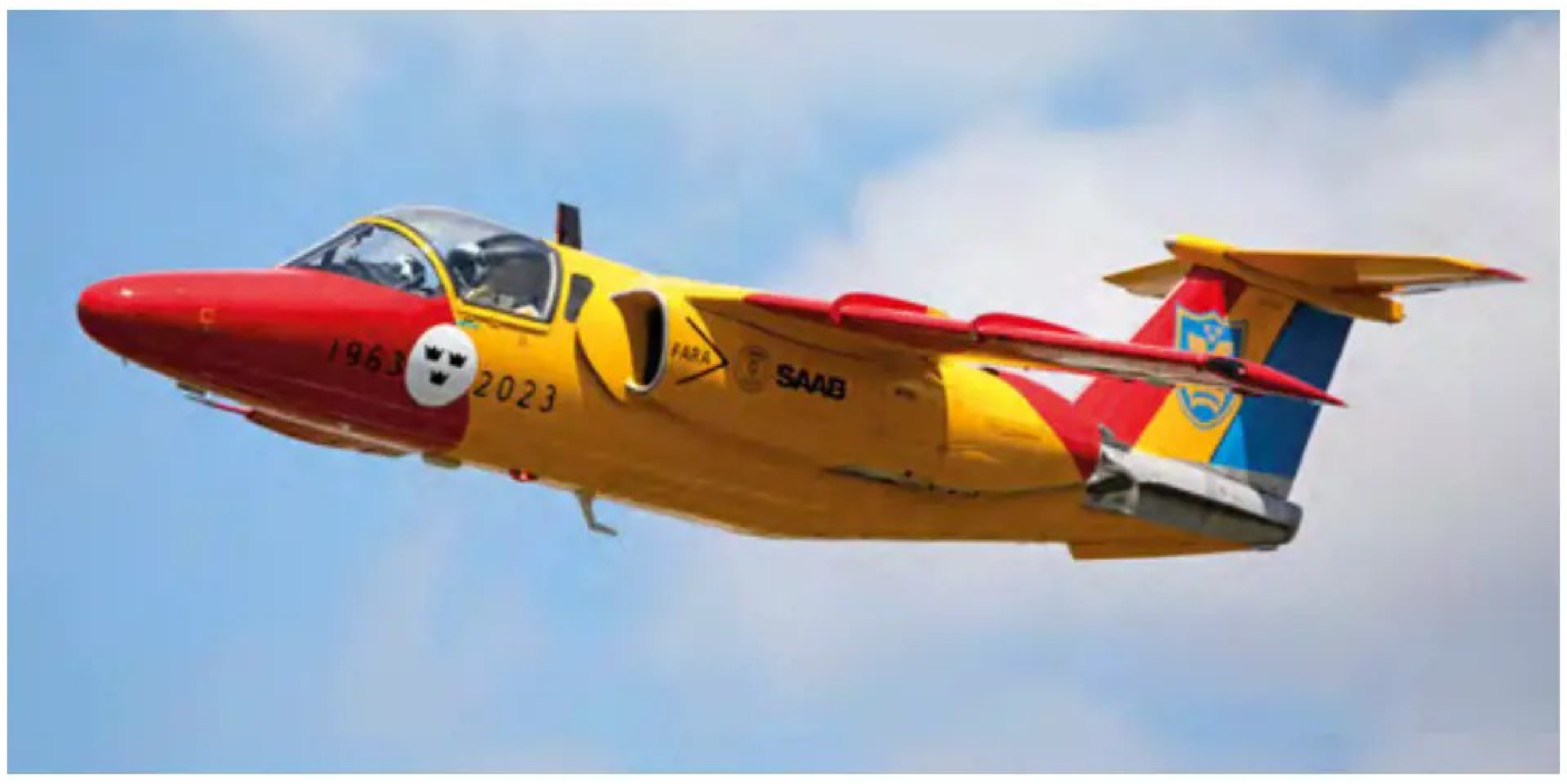
Three SK 60As (60097, 60131 and 60132) were modified in 1977 with civilian-rated flight instruments, radios and a transponder. The ejection seats were exchanged for four regular seats. As SK 60Ds they were used for continuation training of reserve officers, as well as for VIP transport. Between 1977 and 1985 the SK 60Ds served with F 18 Tullinge in the VIP and light transport roles. With the disbandment of F 18, they were transferred to F 16 Uppsala, albeit based at Bromma airport.

The SK 60E was a modification of 10 SK 60As (60140 and 60142-60150) with flight instruments measured in feet and knots instead of the usual metres and kilometres per hour, and the ejection seats again replaced by four normal seats. From 1978, these aircraft were used by the Förberedande



ABOVE: To mark the SK 60's 60th anniversary in 2023, serial 60105 of the Flygskolan received this special scheme akin to that worn by the air arm's SK 11 Tiger Moths. BEN DUNNELL

DATAFILE

AEROBATIC AMBASSADORS

FLYGVAPNET

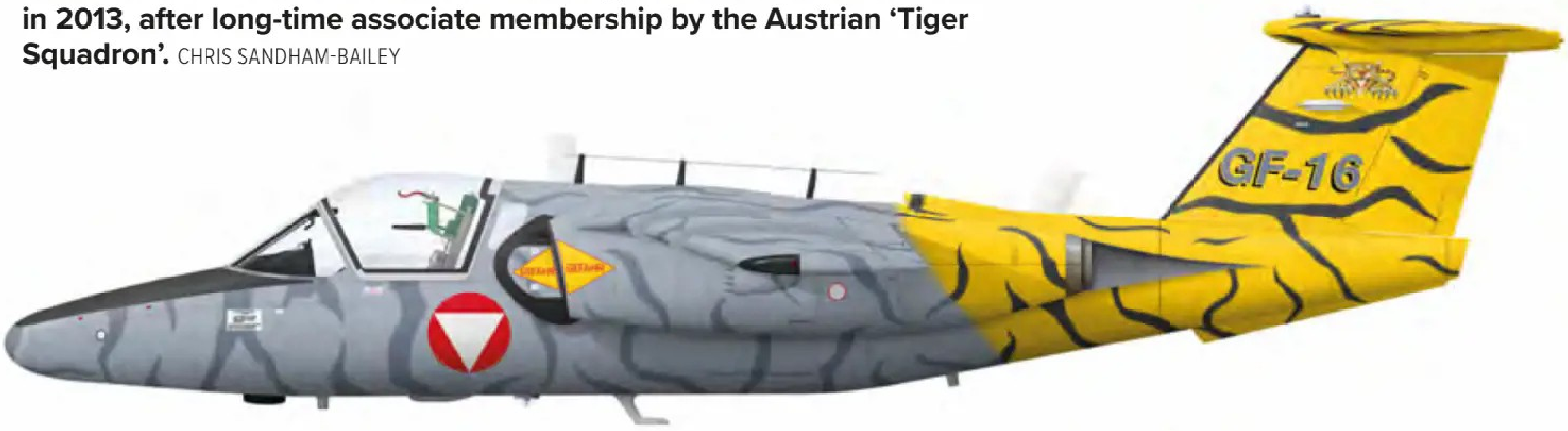
RIGHT INSET: The 2006 incarnation of Team 60, the re-engined SK 60s having forced the adoption of underwing smoke pods due to the lower exhaust temperature of the FJ44 powerplants. SAAB

The SK 60A was the mount of the Flygvapnet's display team, which started life with a two-ship formation from F 5 during 1974, growing to four aircraft the following season, and then six by the end of 1975. Officially dubbed Team 60, a debut performance as such was put on in May 1976. Team 60 went on to appear at airshows and events around Sweden, as well as abroad. A highlight was 1996's Royal International Air Tattoo, where the formation won the Sir Douglas Bader Trophy for best overall flying demonstration. Some seasons were restricted or missed due to various factors, but Team 60 continued operating with the re-engined SK 60s until 2017. Thereafter, solo displays carried on being performed by Flygskolan instructors with Team 60-liveried aeroplanes into 2024.

Ben Dunnell

The green code letter denotes these Saab 105OEs as being operated by the 2. Staffel of Fliegerregiment III at Linz-Hörsching. KEY COLLECTION

BELOW: A familiar and long-lasting scheme on 105OE serial GF-16. The Düsentrainerstaffel became a full NATO Tiger Association member in 2013, after long-time associate membership by the Austrian 'Tiger Squadron'. CHRIS SANDHAM-BAILEY



Civil FlygUtbildning (FCFU, Prepatory Civilian Flight Training) school at Ljungbyhed. Due to a lack of student pilots, it was disbanded in 1980. The FCFU was a precursor to the Trafikflygarhögskolan (TFHS, Airline Pilot Academy), which was established in 1987.

With the RM9B engines being in dire need for replacement, having by the early 1990s accumulated one million flight hours, an engine upgrade programme was implemented, and in November 1993 the Williams-Rolls FJ44 turbofan was selected. A maiden flight by the first re-engined aircraft took place in August 1995.

Although initial plans called for 126 remaining SK 60s to receive the new powerplant, designated as the RM15, only 115 were eventually modified, while through airframe strengthening the number of flying hours was extended from 3,500 to 5,000. Aside from its greater power, the RM15 was far more fuel-efficient and less maintenance-intensive. According to pilot Anders Jonsson, the "increased power output of the RM15 was exactly what the SK 60 needed to improve the aircraft's overall performance. With the RM15, it became possible to use the SK 60's pitch characteristics to obtain a mock firing position."

Around the same time, plans for modifying redundant SK 60s as target-tugs were considered. This variant was to be designated SK 60M. For various reasons, it never saw the light of day.

F 5 Ljungbyhed was disbanded in 1997 and the flight training school, or Flygskolan, relocated to nearby F 10 Ängelholm. In 2003, it was transferred to Malmslätt outside Linköping. The last SK 60s were withdrawn from use by the Flygskolan — on which, latterly, students carried out basic flying training with the 1. Division (1st Squadron) and basic tactical training with the 2. Division — on 18 June 2024, replaced by the turboprop Grob G120TP (SK 40) basic trainer. During its almost 58 years of active service, the SK 60 was highly appreciated by Flygvapnet pilots as a dependable, versatile aircraft. The fleet accumulated a total of 704,010 flying hours, excluding the delivery flights by Saab pilots to the airframes' final destinations during the second half of 2024.

In Flygvapnet service, the type enjoyed a very good safety record. Between 1967 and 1996, 11 were written off in crashes, with eight pilots and three navigators/passengers being killed. The causes were technical malfunction (one), loss of control (five), pilot error (one) and flight into terrain (four). Just one trainee pilot lost his life while flying the SK 60.

Austria's 105OE

Although Saab actively marketed the 105, the only customer apart from the Flygvapnet was Austria. With the 15 May 1955 State Treaty, Austria was re-established as a sovereign nation, the Österreichisches Luftstreitkräfte (Austrian Air Force) being formed shortly afterwards. Its first real combat aircraft arrived in 1961 in the shape of 15 Saab J 29F fighters, an additional 15 being delivered in 1963-64. Supersonic jet fighters were sought, along with a multi-purpose jet trainer, but budgetary restrictions

DATAFILE SAAB 105 PRODUCTION

Serial numbers/ registrations	Construction numbers	Variant	Quantity	Remarks
SE-501, SE-XBY	105-1	105	1	First prototype; written off 17 June 1966
SE-502, SE-XBZ	105-2	105	1	Second prototype; subsequently modified as 105XT and 105G prototypes
60001 to 60150	60.001 to 60.150	SK 60	150	Delivered to Flygvapnet; subsequent conversions to SK 60A to E
SE-511 to 550	105.401 to 105.440	105OE	40	Delivered to Austria

resulted in the fighter requirement being cancelled. The subsequent purchase of 40 Saab 105OEs accounted for a very considerable share of the Austrian defence budget.

Only two weeks after demonstration flights by the 105XT prototype at Zeltweg on 7-8 July 1967, the Austrian defence minister, Georg Prader, announced that 20 Saab 105s would be purchased. The actual contract was not signed until June 1968. A second deal for 20 further aircraft was confirmed the following year.

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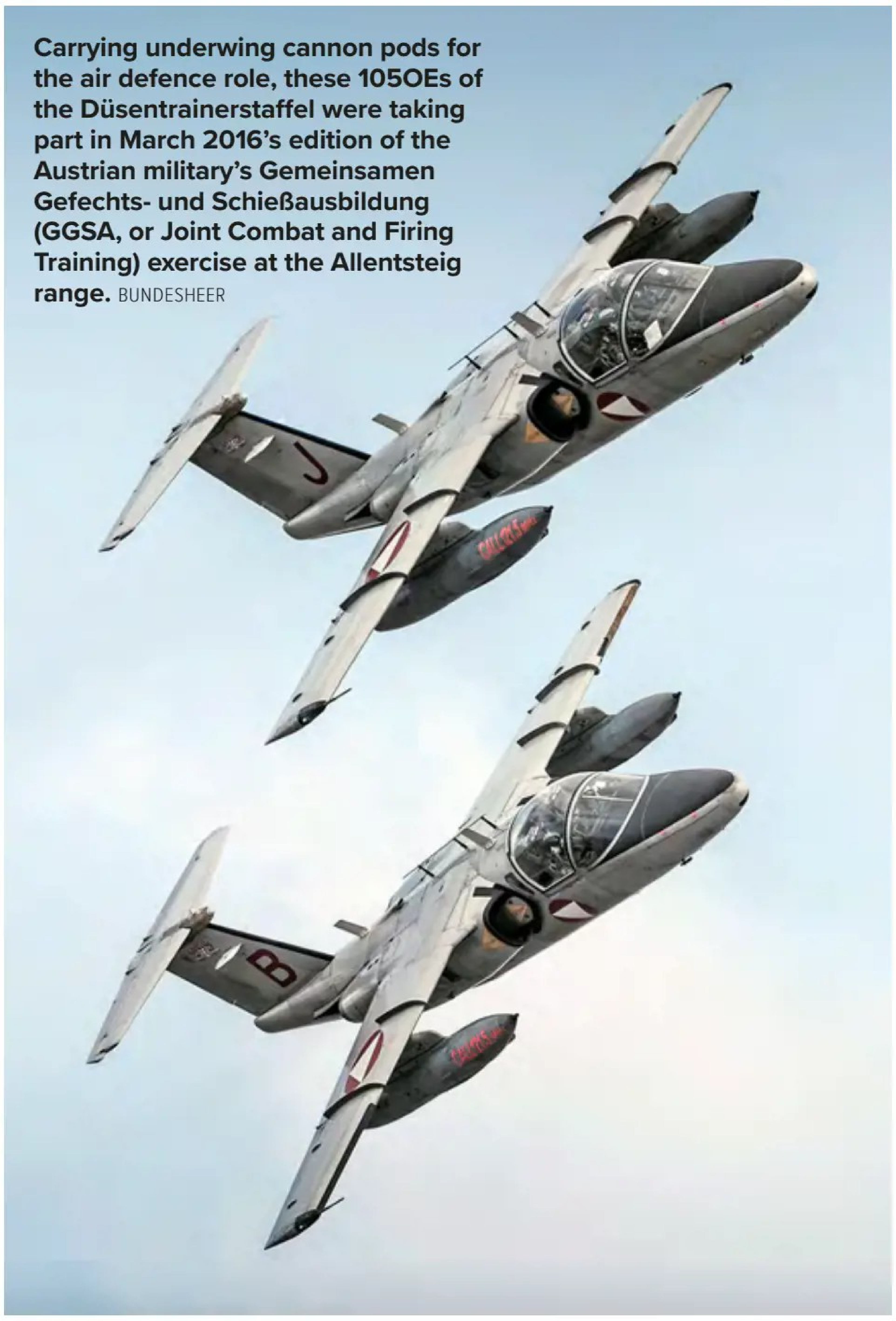
Although designated as the Saab 105Ö (Ö for Österreich, or Austria), the aircraft were usually referred to as the 105OE, while later the unofficial designation 'J 105' — with 'J' standing for Jakt (fighter) as per the J 35 Draken — gained favour. It featured more powerful General Electric J85 engines, a thinner wing resulting in greater maximum speed, increased fuel load and six external pylons. Armament consisted of two 30mm ADEN Mk4 cannon pods, 7.5cm rockets, 13.5cm rockets and 6.3cm practice rockets. A Saab-developed reconnaissance pod containing five Vinten cameras could be carried as well. Although the 105OE had the capability to be armed with air-to-air missiles, the use of such weapons was prohibited by the 1955 State Treaty.

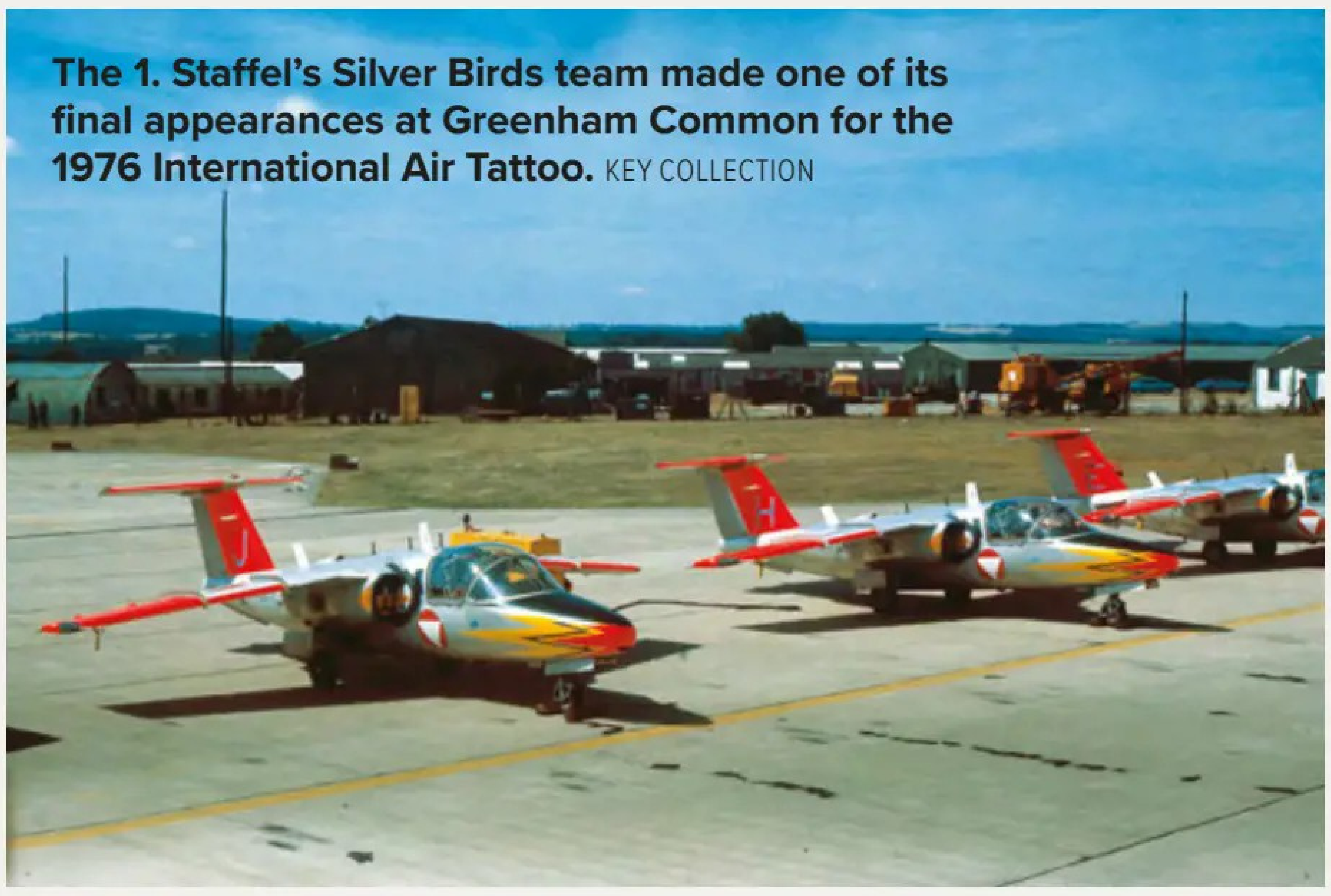
The first 105OE made its maiden flight on 17 February 1970, with Luftstreitkräfte pilots and technicians receiving training at Linköping in the months thereafter. Deliveries lasted between 2 June 1970 and 27 October 1972. Two of the Austrian aircraft were leased back by Saab prior to delivery. Between 2 March and 14 June 1971, c/n 105.420 was registered as SE-DCP for demonstration flights in Finland and participation at that year's Paris show, while c/n 105.435 was used for armament and target-towing trials as SE-DCX from 4 February-19 October 1972.

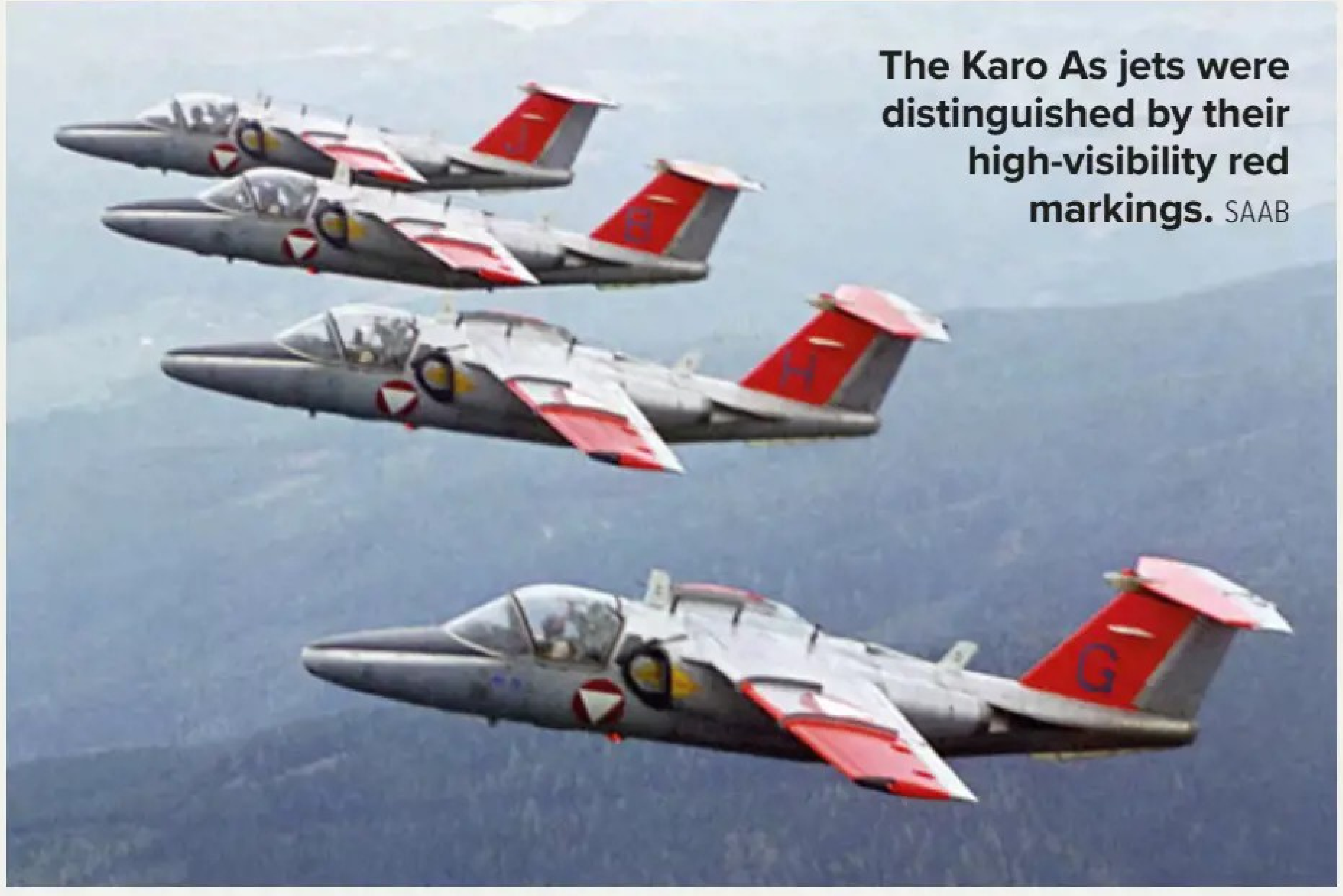
In Luftstreitkräfte service, the Saab 105OE replaced DH115 Vampires and Fouga Magisters in the basic training role, and from 1973 the J 29F for ground attack and surveillance. Initially, the 105OEs were assigned to Fliegerregiment 2 at Graz-Thalerhof and Fliegerregiment 3 at Linz-Hörsching. Retirement of the J 29Fs resulted in the


Carrying underwing cannon pods for the air defence role, these 105OEs of the Düsentrainerstaffel were taking part in March 2016's edition of the Austrian military's Gemeinsamen Gefechts- und Schießausbildung (GGSA, or Joint Combat and Firing Training) exercise at the Allentsteig range. BUNDESHEER

DATAFILE

SILVER BIRDS AND KARO AS


The 1. Staffel's Silver Birds team made one of its final appearances at Greenham Common for the 1976 International Air Tattoo. KEY COLLECTION


The Karo As jets were distinguished by their high-visibility red markings. SAAB

Two Austrian Air Force aerobatic teams, the Zeltweg-based 1. Staffel's Silver Birds and Karo As (Ace of Diamonds) from the Überwachungsgeschwader at Graz-Thalerhof used the 105OE. Active from 1966-72 on the Fouga Magister, the four-aircraft Silver Birds re-formed in 1975 for participation in the Austrian Grand Prix at the Österreichring and took part in other events, including a visit to the 1976 Air Tattoo at Greenham Common. They disbanded soon afterwards. Formed to demonstrate the Luftstreitkräfte's pilot proficiency to the Austrian taxpayer, Karo As flew their inaugural display on 12 July 1975 and a final performance on 19 September 1984.

105OEs also being used for quick reaction alert sorties against intruding foreign aircraft, and to that end on 5 August 1973 a Turkish Air Force Transall was forced to land.

Between 1973 and the introduction of the J 35OE Draken in the late 1980s, the Saab 105OE was the Luftstreitkräfte's sole front-line combat aircraft. One pilot wrote, "turning performance is formidable, which is of great importance during air combat. Another advantage with the 105OE is the ability to pull a considerable amount of g-load, even at low speed. This means that the aircraft is well-balanced and forgiving, allowing student pilots to fly at a high angle of attack at low speed."

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There were other duties, too. An unusual sortie took place on 26 September 1975, when a 105OE was used to transport vital organs to Rome for an urgent transplant. From 4-6 April 1989, Austrian astronaut candidates for a journey to the Mir space station were checked out on the type. For liaison and light transport purposes, the 105OE could be fitted with four-Austrian designed seats.

Upon the start of the Yugoslav civil war, the Luftstreitkräfte was put on a high state of readiness. On 25 October 1991, two 105OEs escorted a Yugoslav Air Force MiG-21R, flown by defecting Croatian pilot Rudolf Perešin, in to land at Klagenfurt. After the J 35OE Drakens were withdrawn in 2005, and even following delivery of 15 Eurofighter Typhoons, the 105OEs — operated from 2006 by the Düsentrainerstaffel (Jet Trainer Squadron), stationed at Linz-Hörsching — continued in use for QRA sorties for budgetary reasons.

The last Saab 105OEs were withdrawn on 31 December 2020, with 156,517 hours having been accumulated during some 254,000 flights. A total of 167 pilots received their wings on the type. Between 1971 and 2003, 12 jets were written off, with 14 pilots losing their lives. Replacement will come in the form of the Leonardo M-346FA, ordered in December 2024.

DATAFILE

EXPORT OFFERINGS

Grounded SK 60 serial 60134 was used as a mock-up of the projected Saab 2060.

SAAB

As far back as 1965, Saab was initiating attempts to secure export orders for the 105. The first prospective customer was the Royal Australian Air Force, which selected the Aermacchi MB326 instead. In 1977, the RAAF was offered an upgraded variant, possibly based on the 105G or 105S. The Saab 110 — reusing a designation originally assigned to an unbuilt three-engine business jet — featured a slightly redesigned nose section and canopy and a maximum take-off weight of 7,000kg. Armament was to consist of two belly-mounted cannon and wingtip pylons for Sidewinder missiles. Eventually the RAAF chose to retain its MB326s until 2000.

The Belgian Air Force was offered the 105XB in 1970, and the following year Lt Col Jacques 'Red' Dewaelheyns air-tested the SK 60B in Sweden. During one sortie, Dewaelheyns managed to eject himself from SK 60B 60091 by mistake, the accompanying Flygvapnet pilot, Sgt Bengt Damberg, landing the canopy-less aircraft. Negotiations with Belgium went as far as signing a contract in early 1973, according to which Avions Fairey was to manufacture 33 Saab 105XBs. The possibility of securing a large export market for Belgian-built 105s was also foreseen. However, pressure from France saw the as-yet unflown Alpha Jet being selected instead.

Efforts in South America saw Brazil briefly considering the Saab 105 in 1965, before selecting the MB326. Chile and Venezuela were offered 16 and 15 to 24 Saab 105s respectively in late 1971. Argentina received an offer for 105s, but declined.

As of 1970, the Pakistani Air Force was searching for a replacement for its T-33As. Saab pitched the 105PAK-0, virtually identical to the 105OE. A contract for 64 aircraft was signed in early 1971, with the Swedish government providing an export permit. It was intended that four jets from the Austrian order would be diverted to Pakistan. But the outbreak of war between India and Pakistan in December 1971 resulted in the permit being revoked. Allegedly, the first two aircraft originally intended for Austria were painted in full Pakistani markings in anticipation of delivery.

When Switzerland initiated a selection process to replace the DH112 Venom ground attack aircraft in 1966, Saab made repeated attempts to sell it the 105. In the latter half of 1968 it offered the 105XH (H for Helvetia), with a redesigned wing including drooped leading-edge slats and wingtip tanks. As the Swiss remained undecided, another variant, also designated 105XH, was put forward in 1970. A development of the 105XT, this had increased fuel capacity and a maximum take-off weight of 7,000kg. Proposed armament included a belly-mounted 30mm ADEN cannon, as well as a wide array of bombs and rockets. Yet another model, the 105H, was submitted to no avail in October 1971. Based on the 105G, it had improved avionics as well as navigation, weapons and guidance systems.

Prospects were also seen in the search by the Finnish Air Force for a Fouga Magister successor. In May 1975, Saab offered the 105S (S for Suomi, or Finland), and a Finnish delegation visited the factory at Linköping four months later. The 105S was also to be fitted with improved avionics, a de-icing system and engine thrust brakes, along with improved ejection seats. Armament alternatives would consist of different types of air-to-ground rockets, practice bombs, a 30mm cannon pod and even AIM-9J Sidewinder air-to-air missiles. Other equipment included target-towing gear and external fuel tanks to increase range. But the BAe Hawk was selected instead, a major drawback for the Saab aircraft being that production had ended a few years previously.

The recently independent Baltic states, Estonia, Latvia and Lithuania, were offered former Flygvapnet SK 60s in the mid-1990s. Saab intended to buy back the aircraft and upgrade them with RM15 engines. However, the Flygvapnet stated it lacked resources to provide training for pilots and technicians. Interest in the SK 60 dissipated when the three countries were given the chance to join NATO.

A developed variant of the SK 60, the Saab 2060, was proposed to the US Air Force and US Navy in 1990 as a candidate for the Joint Primary Aircraft Training System (JPATS) programme. The SK 60F prototype, 60134, was modified as the Saab 2060 mock-up. Powerplants discussed included the Garrett TFE-109 and the Williams-Rolls FJ44. Apart from upgraded avionics and new ejection seats, it was intended for the Saab 2060 to be built partly out of composite materials, thus reducing weight by some 500kg. To improve inverted spin recovery, a small fin was to be fitted atop the horizontal stabiliser. Whatever chance the Saab 2060 had of securing US orders vanished due to the US Navy's insistence on a tandem-seat arrangement.

SK 60 serial 60046 served with F 5 until a birdstrike incident saw its permanent grounding. SAAB

Anders 'Pacman' Jonsson started in aviation by flying sailplanes, completing his first solo aged 14. Joining the Flygvapnet during 1974, he flew the SK 50 Safir, SK 61 Bulldog, SK 60, SK 35C Draken, S 35E Draken and all variants of the Viggen, accumulating 2,500 hours before retiring in 2011 with the rank of major.

"My military career began in July 1974 at the F 5 Ljungbyhed flying school", he says. "After about 50 hours on the SK 61 Bulldog, it was finally time to fly jets. The first flight with my instructor took place on a beautiful autumn day, the tension before the flight being palpable. As soon as I started reading through the checklist, I begin to focus on the forthcoming sortie, feeling quite comfortable. I started the port engine by pressing the green starter button, which immediately began revving up, with the outlet nozzle temperature quickly rising to nearly 890°. This was the maximum allowed when the engine rpm went over 50 per cent, reducing the temperature to the normal 600°. The generator connected and the warning lights went off.

"I gave the technician the sign to remove the chocks, lowered the flaps, armed the seat, and requested clearance from the tower to taxi out for take-off. We were lined up on runway 29 south, and I carefully increased engine rpm from 67 per cent idle to the maximum 101.5 per cent for take-off, checking the maximum outlet nozzle temperature, guide rails, compass direction and gyro horizon. I released the brakes and was surprised how quickly the SK 60 accelerated, listening to the friendly, whining noise of the engines, all without any noticeable vibrations. The speed reached 150km/h, and I released the nosewheel steering and clutched the control column. At 180km/h I pulled back on the control column, carefully feeling for the resistance from the elevator, pulled back a bit further, and we were airborne. I retracted the undercarriage and flaps with the SK 60 quietly, gently and quickly accelerating.

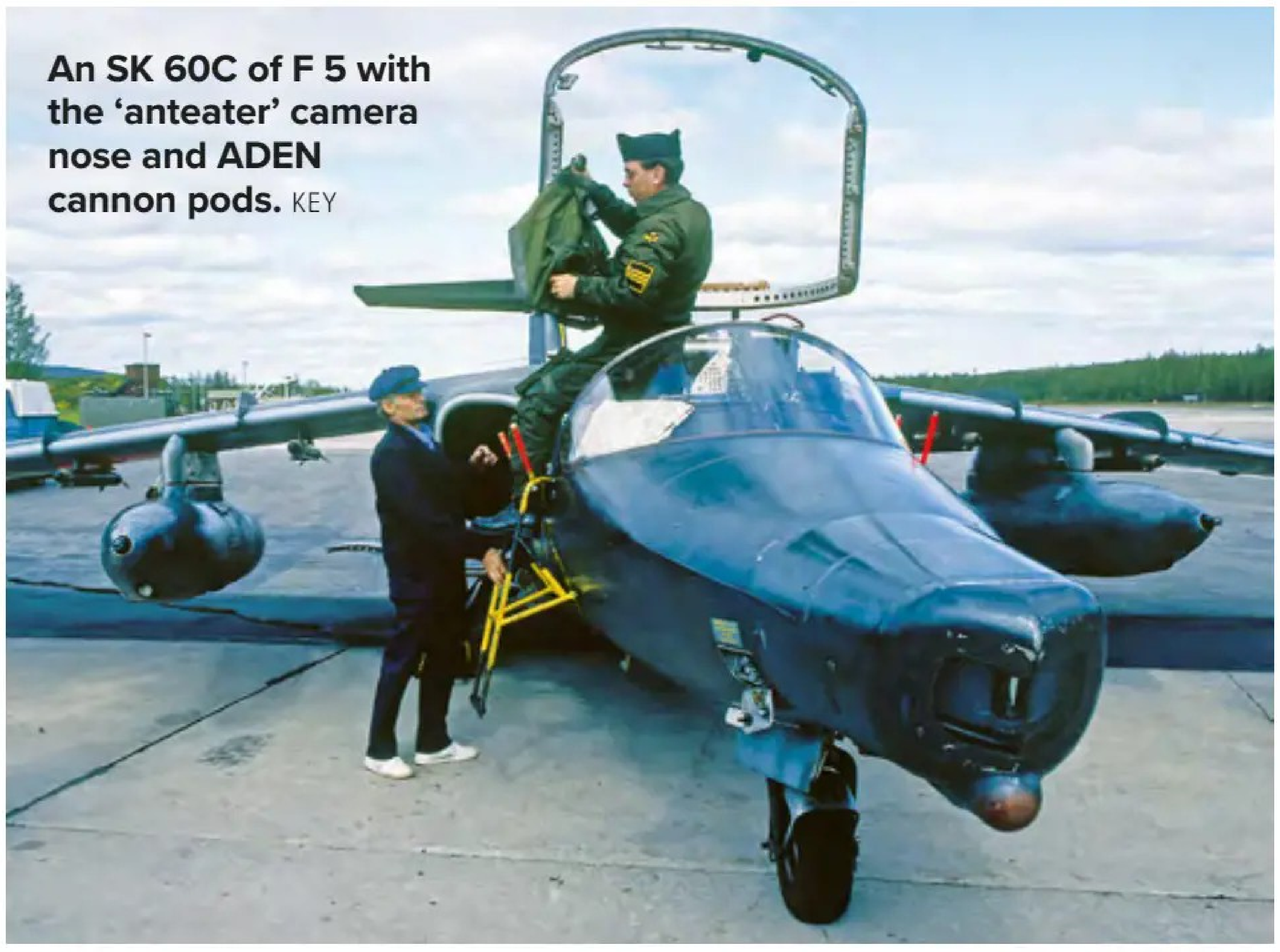
"During my first flight on the SK 60, my instructor, Capt Ohlsson, showed the performance of the aircraft, which felt impressive when compared to the Bulldog. I took the controls and put the SK 60 into a 4g turn at a speed of 600km/h. What a speed machine! I increased the g loading to 5.5g, with the speed only marginally reducing.

"After spending 30 minutes getting acquainted with the aeroplane, it was time to land. Although essentially a dependable and predictable aeroplane, within its outer performance envelope the SK 60 was not always easy to handle. While approaching F 5, I reduced speed to 400km/h and extended the airbrakes, resulting in the nose pitching down slightly, which I corrected by carefully adjusting the trim. The SK 60 was easy to handle during this process.

> **“At low level its characteristics were excellent”**

"We entered the traffic pattern at an altitude of 400m and a speed of 400km/h. I reduced the engine rpm, turning right downwind at 350km/h. I then lowered the undercarriage and flaps as well as retracting the airbrakes. The aeroplane felt stable even during the right-hand turn towards runway 29 north, the speed gradually being reduced to 210km/h when passing over the threshold. Flaps fully down on the last leg. The SK 60 floated over the runway before softly setting down 150m from the threshold. Brakes were applied and I slowly lowered the nose. My instructor was continuously monitoring and supporting me. Capt Ohlsson said the flight had gone well, and I could only eagerly await the next one.

"Following flight training at F 5, consisting of roughly 160 hours on the SK 60, it was time to go to the F 20 cadet training school at Uppsala. At F 20 we received tactical training in the fighter, ground attack and reconnaissance roles using the SK 60. At low level, the flying characteristics of the SK 60 were excellent, being so easy to manoeuvre that one had to



An SK 60C of F 5 with the 'anteater' camera nose and ADEN cannon pods. KEY

take care not to undercut the minimum allowed altitude, 20m.

"When carrying pylons and armament, it was obvious the SK 60 was somewhat underpowered. The Austrian Saab 105OEs had considerably more powerful engines, and I wished our SK 60s were similarly powered. The take-off run was longer, and the rate of climb slower, but this was of course within the acceptable performance envelope. At low altitude, the flight characteristics were not particularly affected, although the maximum speed was reduced somewhat when external armament was carried.

"Flank attacks worked well, pulling up and climbing steeply, and then making a split-S at altitude, pushing the nose down, engaging the target and aiming low, so I could put the aiming point beneath the target like a fish-hook and then fire. After that, I'd pull 4-5g during the pull-up, make another split-S, turn away from the target and dive down to extremely low altitude.

"In air combat, the SK 60 had a good turning radius, but due to the lack of engine thrust, one had to be careful in pitch. In a dogfight with a JA 37 Viggen, the SK 60 had the edge at speeds between 300 and 700km/h. Manoeuvring the SK 60 at low speeds demanded ample use of rudder.

"The SK 60 was a really nice aeroplane that served with the Flygvapnet for nearly 60 years, albeit being somewhat underpowered with the RM9B engine. When upgraded with the RM15, the SK 60 had an improved rate of climb as well as a higher cruising speed. However, starting and shutting down the engine took a bit longer than with the RM9B."

The author thanks Lennart Berns, Anders Jonsson, Tor Johnsson, Tord Jonsson, Villy Karlsson, Kenneth Nilsson, Björn Svedfelt and Therése Åkerstedt.

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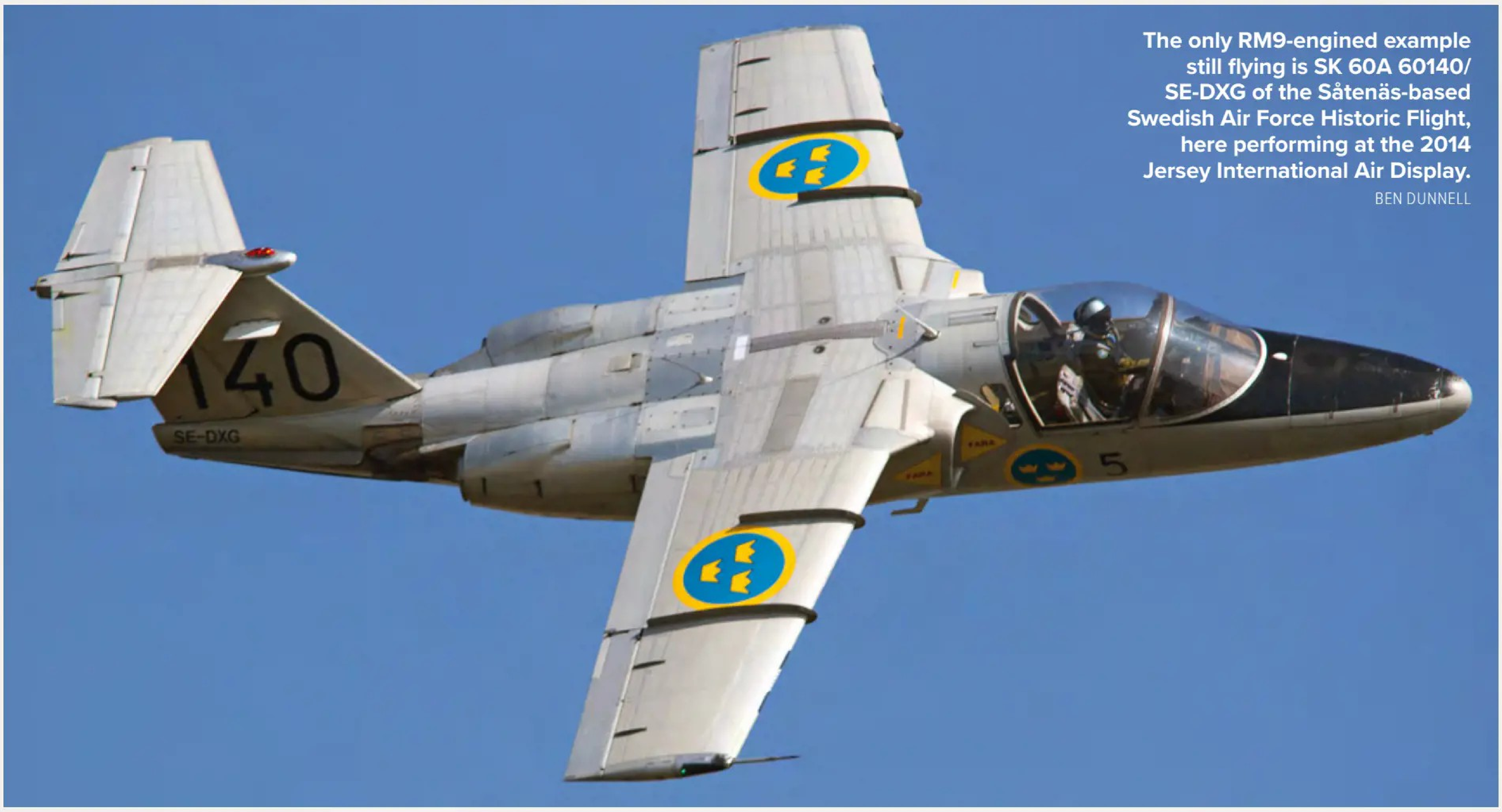
IN PRESERVATION



The only RM9-engined example still flying is SK 60A 60140/SE-DXG of the Såtenäs-based Swedish Air Force Historic Flight, here performing at the 2014 Jersey International Air Display. BEN DUNNELL

The SK 60 is well-represented at museums around Sweden, 10 being on display, while others are in store. SK 60A 60113 is in the Flygvapenmuseum (Air Force Museum) at Malmslätt. Other preserved SK 60s include 60004 with the Flygmuseet F 21 at Luleå, 60056 in the Jämtlands Flyg- och Lottamuseum at Optand, 60074 at Bunge Flygmuseum, 60082 at Ängelholms Flygmuseum, and 60101 in the Aeroseum at Säve. SK 60A 60140 is airworthy with the Swedish Air Force Historic Flight, which received three re-engined SK 60s, 60105, 60062 and 60125, after the type's retirement. A significant survivor is second prototype SE-XBZ at the Svedinos Bil- och Flygmuseum at Ugglarp, on loan from the Flygvapenmuseum. A number of 105OEs are preserved in Austria.

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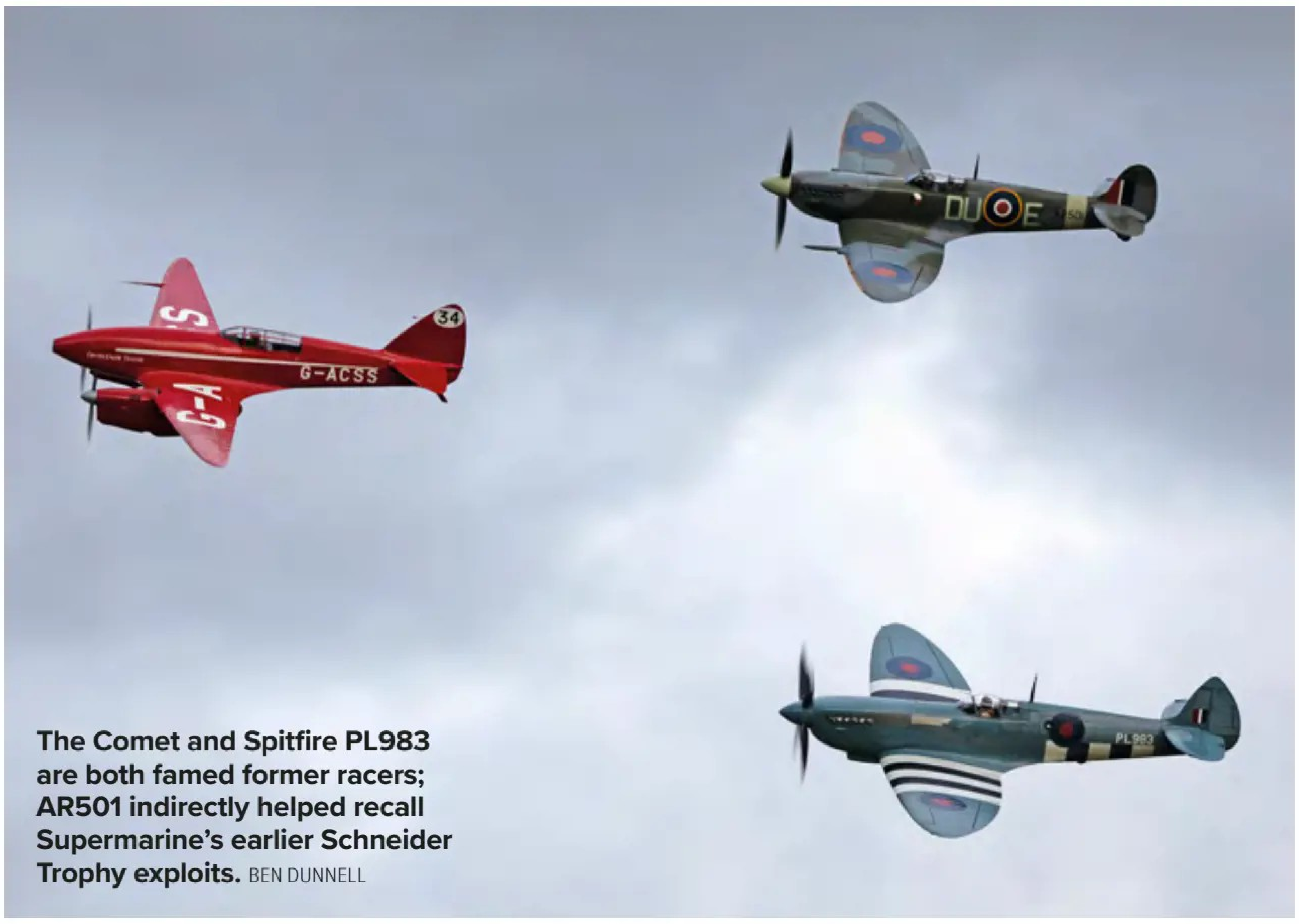
Events

Shuttleworth Race Day Airshow

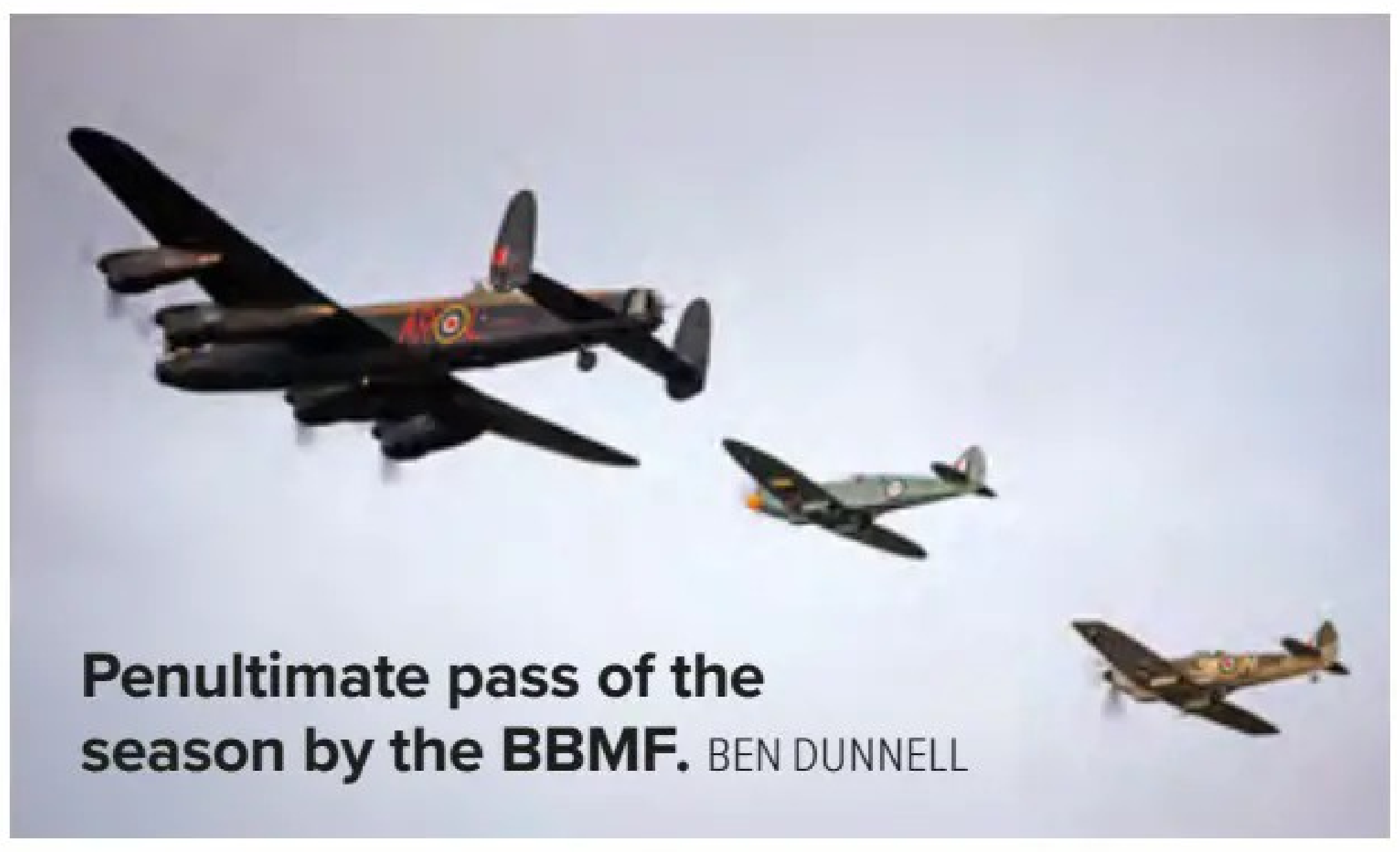
5
OCT


The Comet and Spitfire PL983 are both famed former racers; AR501 indirectly helped recall Supermarine's earlier Schneider Trophy exploits. BEN DUNNELL

It may outwardly appear to be on the wild outer reaches of nostalgia, but I do miss those invigorating early mornings when travelling to the final British airshow of the season involved scraping a thin layer of frost from the windscreen while exhaling clouds of condensation under a gin-clear sky. Those days, however many/few of them there really were, seem to have gone forever, replaced by increasingly standard-issue benign temperatures, and even less welcome strong winds.

So it was that the last airshow weekend of the first quarter of the 21st century faced decimation. The Duxford show on 4 October saw only three, heavy-duty acts — the Red Arrows, RAF Typhoon and the Catalina — making it into the air. Even with the gusts due to abate somewhat, it wasn't looking good for the more delicate Old Warden-based fare to get in one more 2025 performance the following day.

Thus the opening item, the vintage handicap air race, featured just three aeroplanes, the Blackburn B-2, Polikarpov Po-2 and Parnall Elf facing as arduous a challenge from the weather gods as from any handicapper's slide rule. Evoking the all-too-brief heyday of Formula One air racing during the 1970s were Monnet Sonerai I G-LOWE, this Formula V-class competitor flown in customarily exuberant style by John Dodd, and the electric green Cassutt 111M G-BFMF with Trevor Jarvis squeezed into the diminutive cockpit. Although the Yeovilton-based, Navy Wings-operated Harvard G-NWHF — which was originally scheduled to just be displayed statically — didn't land due to the conditions, ex-Sea Harrier pilot Alistair McLaren gave perhaps the peppiest display of the type seen for many years. Jean-Michel Munn and Stu Goldspink brought back memories of 1970s and '80s airshows with a Pitts Special aerobatic duo in S-1S G-SWON and S-2AE G-STUI, followed by the Shuttleworth Desoutter I.


Penultimate pass of the season by the BBMF. BEN DUNNELL

Two of Shuttleworth's cadre of immortal racers, the Miles Hawk Speed Six and Comper Swift, got airborne on the cross runway for their displays with Richard Crockett and Scott Butler at the helms, but as the modern aerobatic sequences, expertly flown by Mark Jefferies and Chris Burkett in Extra EA330 and Edge 540, were under way, and with the main runway still afflicted by a considerable crosswind component, it began to feel as if that may have been it for historic action.

But no: what an enthralling final 45 minutes ensued. The wind abated just enough for Paul Stone to venture aloft in that most illustrious racer of all, DH88 Comet G-ACSS *Grosvenor House*, which was joined for what has been an increasingly welcome feature at Shuttleworth over the past few years — a never-before-seen formation. From Duxford came John Romain in the Aircraft Restoration Company's Spitfire PRXI PL983, and with Paul Shakespeare in Shuttleworth's MkV AR501 completing the picture, nobody would have complained had the first Comet/Spitfire duo formation and their excellent solos been the show-stopping event finale.

Yet a hubbub of even more encouraging news had gone through the crowd: the Battle of Britain Memorial Flight Lancaster had started engines at Coningsby, a base well-known as being highly crosswind-critical with its one runway. Few thought the BBMF would be able to make it, but with PA474 due to be off the scene for a couple of years while being overhauled, it soon became apparent the flight was on 'maximum effort.' So it brought a wonderful season to a crescendo, with Sqn Ldr Al Luckins in Spitfire XVI TE311 and Sqn Ldr Mark Sugden aboard Spitfire PRXIX PM631 accompanying the Lancaster. To close, PA474, with Sqn Ldr Paul Wise in the hot seat, departed over the crowd in a gentle climb with the four Merlins bellowing away at +7 boost, a powerful aural memory to keep devotees of Roy Chadwick's ever-enduring design fortified until, hopefully, 2027. ***Tony Harmsworth***

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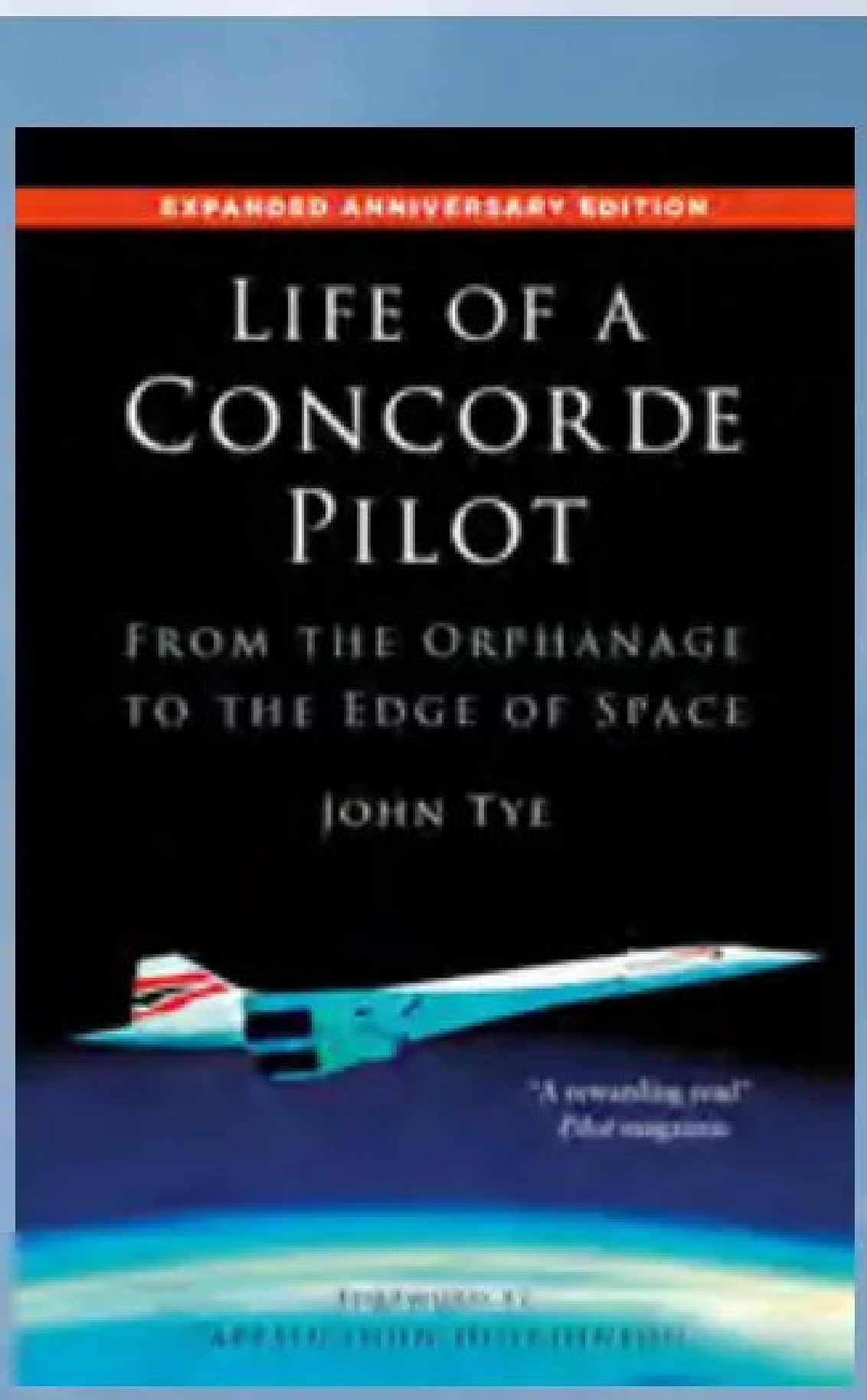
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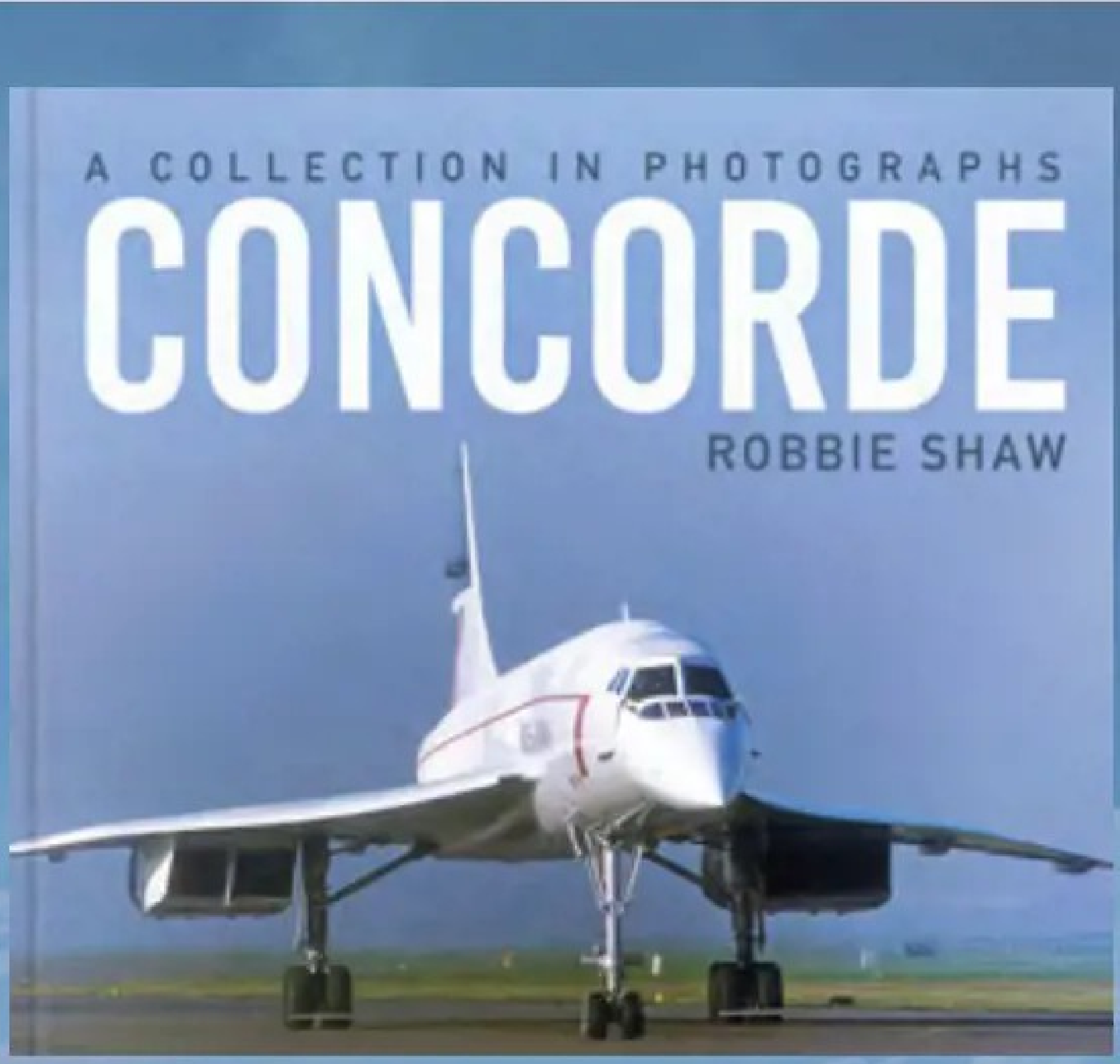
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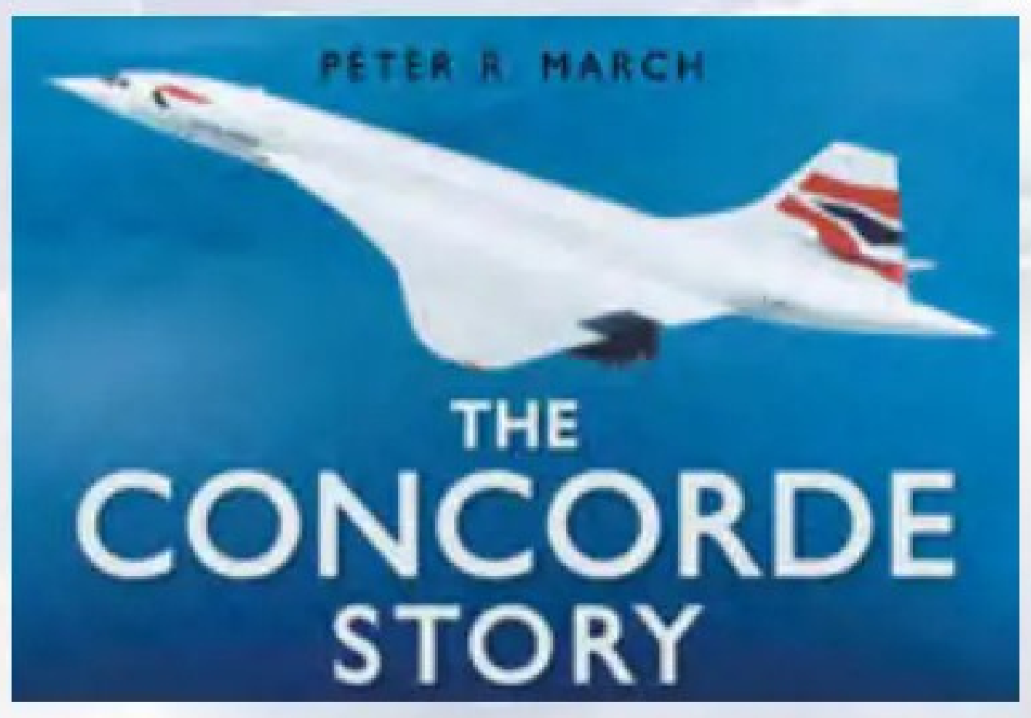
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Reviews

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★★★★☆ Excellent
★★★☆☆ Good
★★☆☆☆ Flawed
★☆☆☆☆ Mediocre
Enough said

The latest books for the discerning aviation enthusiast

Bristol Brabazon

by Alan J. Porter
published by Air World

BOOK of the MONTH

Bristol's Brabazon, conceived to the (Lord) Brabazon Committee's Type I requirement for "a large, long-range landplane for the North Atlantic route" is often written off as a white elephant with just a single prototype flying, which was unceremoniously scrapped following programme cancellation in July 1953. The statement in the House by Duncan Sandys, Minister of State, gave an uncompromisingly harsh judgment on the project, noting, "neither civil airlines nor fighting services could foresee any economic use for the Brabazon..." Ill-judged? Ill-timed? Maybe, but the Brabazon's story is an interesting one which is exhaustively and interestingly related by author Porter.

The Brabazon was perhaps dogged from the start by the fact that the British aircraft industry had missed out on the experience of designing and building civil airliners during the war years 1939-45, meaning Douglas with the DC-4 and Lockheed with the Constellation had a head-start. BOAC's opinions were taken into account in the design of the Brabazon I, and the contract was awarded to Bristol. For that company, the challenge was considerable, as the Brabazon would have a wingspan and all-up weight three times greater than any aeroplane it had built to date. Despite its size, it was designed for just 52 sleeping passengers in berths or 96 seated daytime passengers — true luxury travel. As conceived, it had two decks (ahead of its time) and eight Bristol Centaurus engines driving four sets of contra-rotating propellers. The part-built Brabazon II would have made the jump to turboprop power, with eight Bristol Proteus engines.

This is a great account of a fantastic yet doomed aircraft, illustrated with eight pages of black-and-white images of the prototype G-AGPW. Strangely, no shot is included of it with RAF markings and military serial VX206, a scheme it carried late in its life. ***Denis J. Calvert***

ISBN 978-1-39905-568-0; 9.5 x 6.3in hardback; 259 pages, illustrated; £29.99

★★★★

Combat Aircraft 157: Swordfish Units of World War 2

by Matthew Willis
published by Osprey

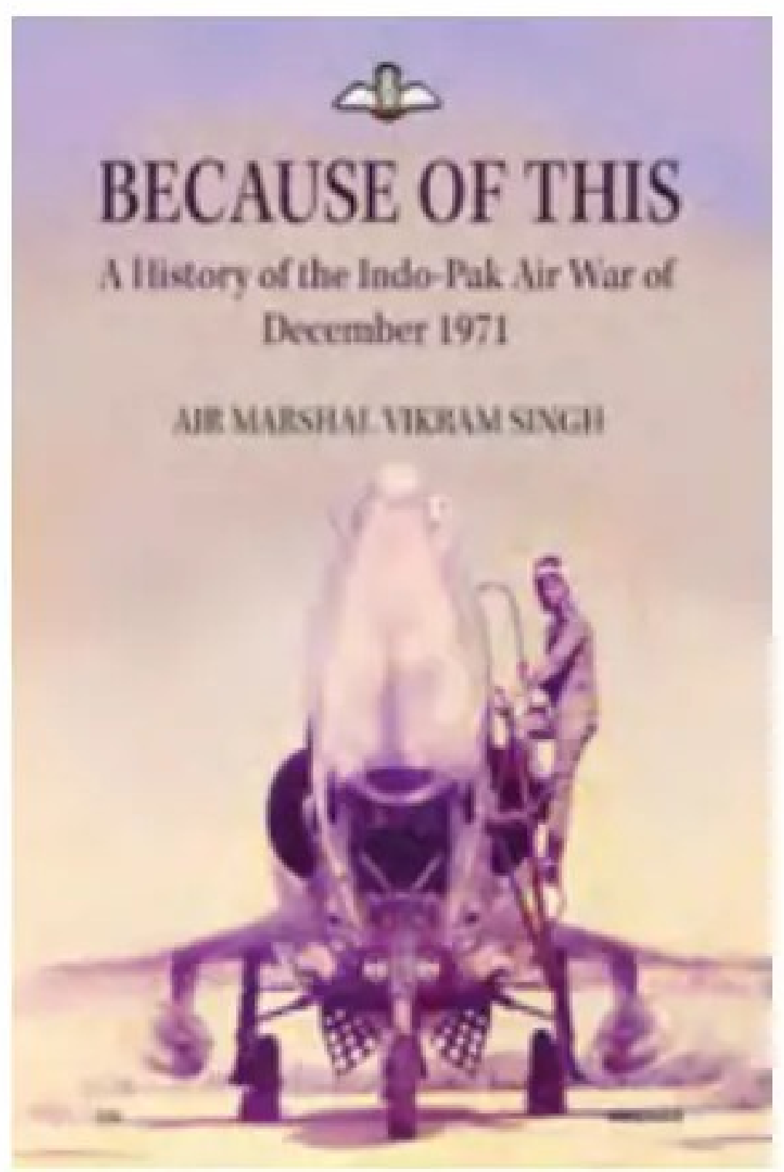
The author's contention that the Swordfish "was the most important combat aircraft of the Royal Navy's Fleet Air Arm for most of World War 2" is surely incontrovertible. At the outbreak of war, 13 FAA squadrons were equipped with the type, including two which operated Swordfish floatplanes from battleships and battlecruisers.The text, in best Osprey style, relates the Swordfish's war, with good use of first-hand accounts. Better-known actions, such as the sinking of the *Bismarck*, are dealt with in suitable detail, but there are also accounts of other, less spectacular missions by the type. In February 1942, in the defence of Singapore, four aircraft bombed Kluang airfield and a nearby railway line before returning to Tengah where, having been lined up on the airfield, they were destroyed just days later by strafing enemy fighters. Use by the RAF is also covered, including No 202 Squadron's operations from Gibraltar on reconnaissance and anti-submarine duties. Photo reproduction, all in monochrome, is good and the 22 colour profiles, two to a page, are excellently done and round out an interesting and well-produced title. ***DJC***

ISBN 978-1-4728-6510-6; 9.8 x 7.3in softback; 96 pages, illustrated; £16.99

★★★★

Because of This: A History of the Indo-Pak Air War of December 1971

by Air Marshal Vikram Singh
published by United Service Institution of India



This impressively large and meticulously researched book is an in-depth account of the air war between India and Pakistan of December 1971, where the adversaries' roots were firmly embedded with the RAF. Intriguingly, each flew aircraft from both the eastern and western blocs — the US, France and China in Pakistan, with the Indians using a mix of British and Soviet types. Since partition in 1947 tensions had always simmered between these two Commonwealth members, mainly over the divided state of Kashmir. The catalyst for this war, however, was the independence movement in Bengali East Pakistan, supported by the Indians. There was limited air combat in this area but the Indian Air Force's support to the army was judged as the key to success. When signing the surrender, the Pakistani commander pointed to the wings on an IAF officer, saying he was there "because of this."

This is the most detailed description yet published of IAF operations in the 1971 war, and it illustrates well how the air environment in the west was hotly contested with a considerable amount of aerial combat, which saw the first, long-awaited action between supersonic rivals when MiG-21s fought F-104s. Both sides conducted extensive interdiction attacks providing close air support to the ground battle, and Singh's book conclusively highlights the critical part IAF squadrons played in defence of the Chammb sector, which has previously been criticised. The level of research is astonishing, and while a work with this level of

(Continued p94)

CHRISTMAS GIFT GUIDE

CALENDARS

Great War Aviation Society Calendar

The Great War Aviation Society 2026 calendar
www.greatwaraviation.org
APRIL 2026

The annual calendar from the Great War Aviation Society has raised tens of thousands of pounds towards maintaining the British Air Services Memorial at Saint-Omer airfield, which pays tribute to the circa 8,000 airmen killed in France and Flanders during World War One. Its 2026 edition includes a dozen excellent depictions of the First World War in the air — shown here is Ivan Berryman's representation of Coastal class airship C9 in the hands of Flt Cdr James G. Struthers, shortly after a successful attack on a surfaced German U-boat. Please note that post-Brexit complications rule out shipments to the EU.

Prices: £12 in UK, £17.00 in rest of the world (excluding EU), both including P&P
Information and ordering: greatwaraviation.org

Darren Harbar 2026 Calendar

Well-known photographer and *Aeroplane* contributor Darren Harbar's calendar for the coming year takes in a dozen historic aircraft subjects, ranging eras-wise from First World War BE2e replicas to a pair of the Royal Navy's last Sea Harrier FA2s. There are Second World War fighters aplenty, but not to the detriment of other types, like the Historic Aircraft Collection's Fury which is also the cover subject. It's produced in A3 size with enough room on the dates pages to be highly usable — and given that any such product sinks or swims on the quality of its image reproduction, this is very good.

Prices: £15 plus P&P, or £12.50 each if buying two or more
Information and ordering:
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BEN DUNNELL

Aéro Vintage Academy

Go flying from France's most famous home of vintage aviation, La Ferté-Alais, with the Aéro Vintage Academy. From the grass aerodrome south-west of Paris it offers flights in a Travel Air 4000, three Stearman Kaydets, a Beech D17 'Staggerwing', Piper Cub, T-6 Texan, T-28 Fennec, Pitts S-2B and Epsilon. Training courses are also available on some of the fleet.

Prices, information and ordering: www.aero-vintage-academy.fr

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Ideal seasonal gifts come courtesy of the aviation clothing available at Exmoor Trim, "inspired by classic RAF style and built for modern-day comfort". The range runs "from shirts to heritage-inspired accessories" — shown are the Lancaster long-sleeved T-shirt and khaki cap — and promises "style, comfort, and authenticity."

Prices, information and ordering: exmoortrim.co.uk

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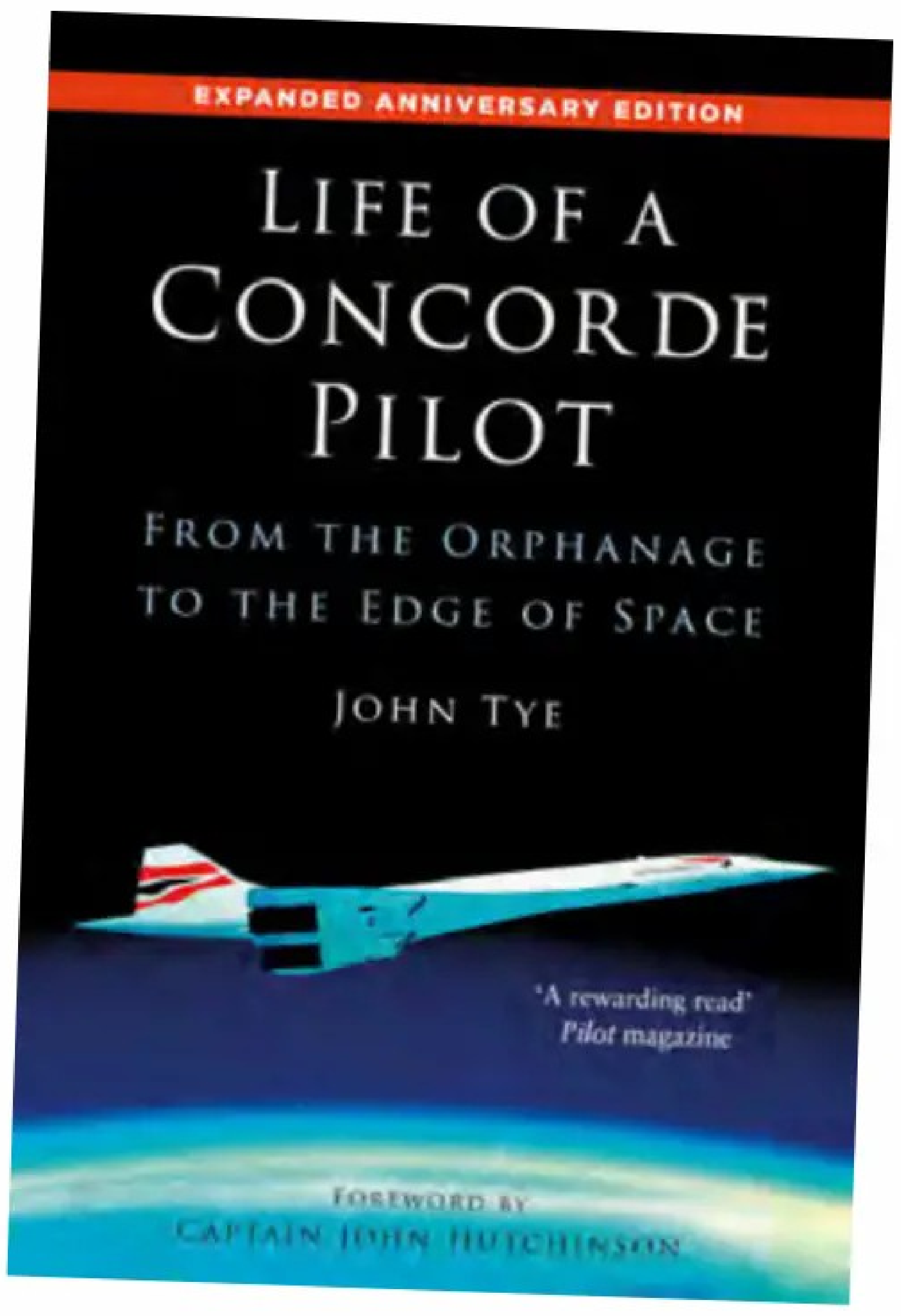
Prices, information and ordering: telephone 01628 823272 (ask for ops), e-mail: ops@wlac.co.uk or www.wlac.co.uk

THE FEW
BATTLE OF BRITAIN 85

GDMK Images

The aviation collection from GDMK Images takes in a huge range of aircraft types and covers everything from magnets, keyrings and mugs to premium garments and canvas prints. There are standard commemorative designs relating to significant historical moments and aircraft types — illustrated here is the Battle of Britain 85th anniversary fleece — and you can choose from more than 35 existing aircraft. Every element can be customised: names, dates, aircraft designations and special events are a few examples. And if your preferred aircraft is not already available, new types can be easily requested.

Prices, information and ordering: gdmkimages.co.uk


EXPANDED ANNIVERSARY EDITION

LIFE OF A CONCORDE PILOT

FROM THE ORPHANAGE TO THE EDGE OF SPACE

JOHN TYE

'A rewarding read'
Pilot magazine

FOREWORD BY
CAPTAIN JOHN HUTCHINSON

The History Press

Reissued by The History Press as an updated new edition ready for January's 50th anniversary of the first commercial Concorde flight, *Life of a Concorde Pilot* is the memoir from John Tye, who started life being given up for adoption but went on to become one of only 134 British Airways Concorde pilots. It follows his career from BA to Dan-Air, back to BA and Boeing 777s, Concorde and Airbus types, culminating in his reluctant retirement at the end of 2022. A much-acclaimed read.

Price: £20.00
Information and ordering: thehistorypress.co.uk

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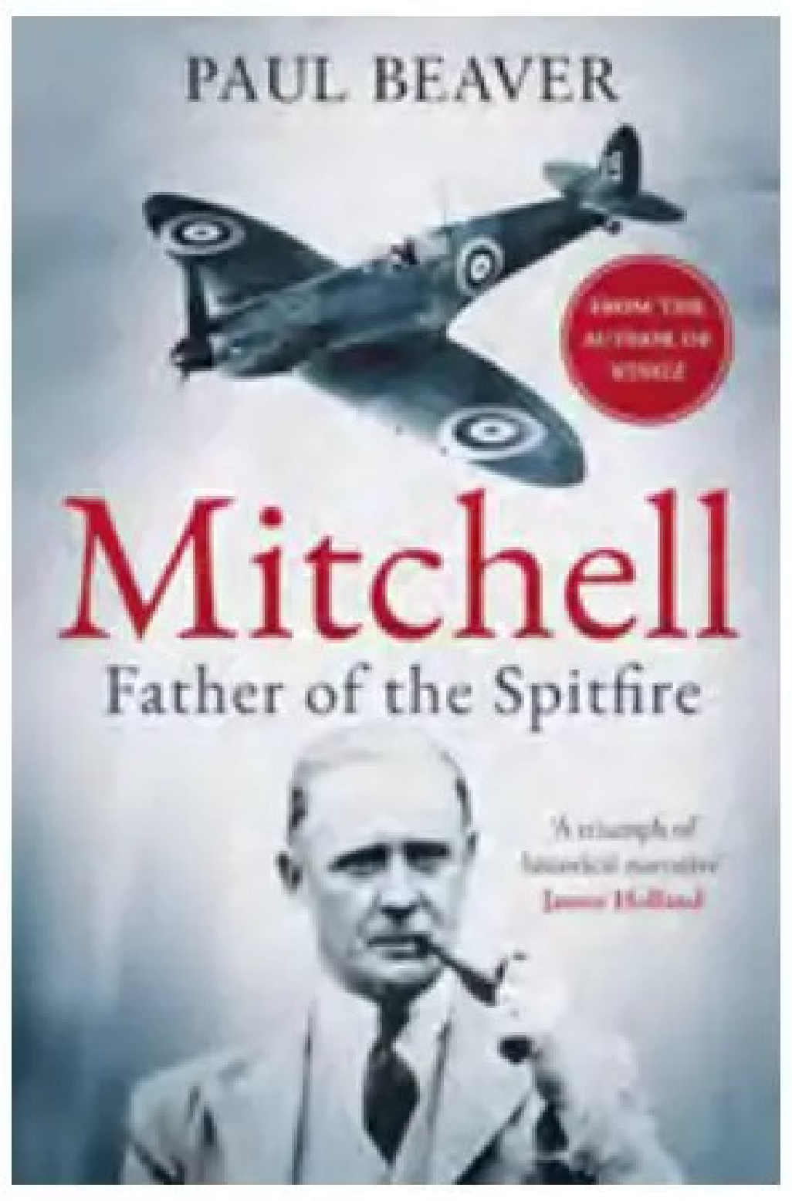
Prices, information and ordering: stirlingtimepieces.com

academic rigour inevitably comes with a hefty price tag, it is essential reading, not least since it highlights valuable lessons of air-land integration that are valid today.
Andrew Thomas

ISBN 978-93-6080-003-1; 11.25 x 8.5in hardback; 626 pages, illustrated; £89.99
★★★★

Mitchell: Father of the Spitfire

by Paul Beaver
published by
Elliott & Thompson



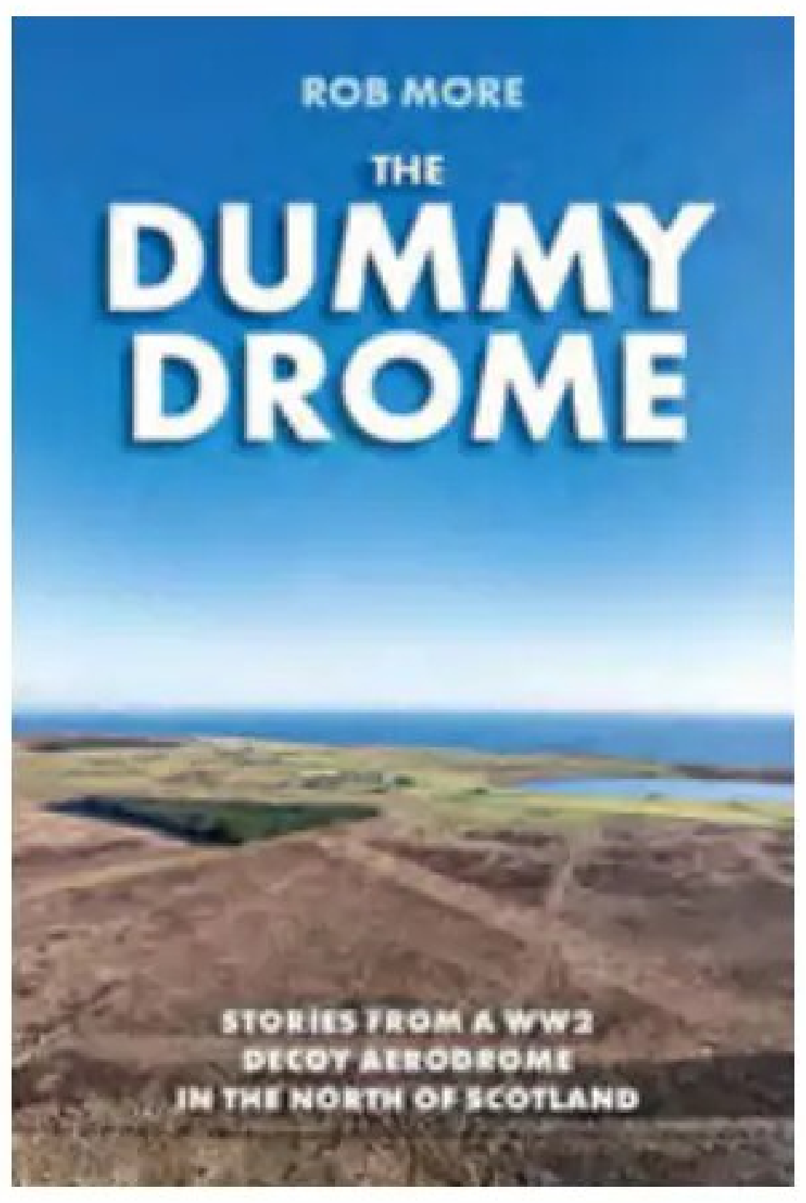
Author Beaver enters the crowded market of accounts of Reginald Mitchell's career as an aircraft designer at Supermarine. There's already son Gordon Mitchell's *R. J. Mitchell: World-Famous Aircraft Designer — Schooldays to Spitfire*, John K. Shelton's *Schneider Trophy to Spitfire* and his later *R. J. Mitchell: To the Spitfire* to name but a few. Unsurprisingly, all four titles include the word Spitfire, as surely they should. Beaver here promises "the definitive story of a man who helped change the course of history". His style is relatively informal, as when he describes the Schneider Trophy races as "the aeronautical 'World Cup' of their day."

The text paints well a broad picture of the inter-war years, discussing the design of Mitchell's Schneider Trophy racers against a background of increasing national prestige but diminishing government financial support. The development of the Type 300, which became the Spitfire, is decently covered, up to (but not far beyond) prototype K5054's first flight. You'll find the odd puzzling statement, such as "his design philosophy was not linear progression but a process of continuous improvement", and while image reproduction in the eight-page photo section is good, that of the shots embedded within the text is less so. ***DJC***

ISBN 978-1-78396-903-6; 9.5 x 6.3in hardback; 316 pages, illustrated; £20.00
★★★

The Dummy Drome

by Rob More
published by Whittles Publishing



In his preface, the author offers, "The Dummy Drome is a story about nothing, about something that wasn't really there", adding, "For a brief period in history, it was busy, active, full of people, buildings […] designed to draw attention to itself". The 'airfield' in question was near Sarclet in Caithness, and its purpose was as a decoy for nearby RAF Wick, which was used by Fighter Command in the early war years, and by Coastal Command to mount patrols over the Atlantic and the North Sea. The dummy drome's three runways were never meant to be used for anything as ordinary as take-offs and landings. Rather, they were there to deceive enemy aircraft into wasting their bombs on an 'airfield' designed precisely for that purpose. That said, two of 'our' aircraft are recorded as having landed there in error, subsequently having to be dismantled and taken by road to RAF Wick.

This is a fascinating story which explains the thinking behind decoy airfields and how a small number of personnel kept up regular signs of movement and activity. It is also a social history, telling of the interaction between based servicemen and the local populace, all sworn to secrecy. Profits from sales will be shared between the RNLI and Cancer Research. ***DJC***

ISBN 978-1-84995-600-0; 9.2 x 6.2in softback; 104 pages, illustrated; £12.99 from www.whittlespublishing.com
★★★

Helicopter-Ship Dynamic Interface Research 1986-2001 at RAE/DERA Bedford

by R. Bruce Lumsden
published by
R. Bruce Lumsden

Helicopter–Ship Dynamic
Interface Research
1986–2001

This is the third of the author's mighty self-published works on research in which he was involved, following on from previous titles relating to blind approach and landing systems. Here the focus is on the trials programmes undertaken by the All-Weather Operations element of the Royal Aircraft Establishment and later the Defence Evaluation and Research Agency, insofar as it related to embarked helicopters for the Royal Navy's small ships: in particular the impending advent of the EH Industries — subsequently AgustaWestland and Leonardo — Merlin. Bigger and heavier than the Lynx and Sea King hitherto flown from those vessels, its safe operation from small decks in all sea conditions represented a challenge.

The result is an immensely, impressively detailed volume for those with a serious interest in how these capabilities were developed. A venerable RAE Wessex, XR503, was the initial trials aircraft, but there were many others including a Canadian Forces CH-124 Sea King and Dauphin IIs of Bond Helicopters. Lumsden's text reads well and he includes many a personal aside from the research efforts themselves, as well as photos and diagrams aplenty. Thank goodness there are people like him around to document subjects such as this — I think "definitive" is the only word to describe it.
Ben Dunnell

ISBN 978-1-9999174-2-5; 11.75 x 8.23in softback; 478 pages, illustrated; £25 plus £5 P&P (UK only) from wavaeropubrbl@yahoo.com
★★★★

Military Aircraft on Display: First World War to the Present Day

by Royston Morris
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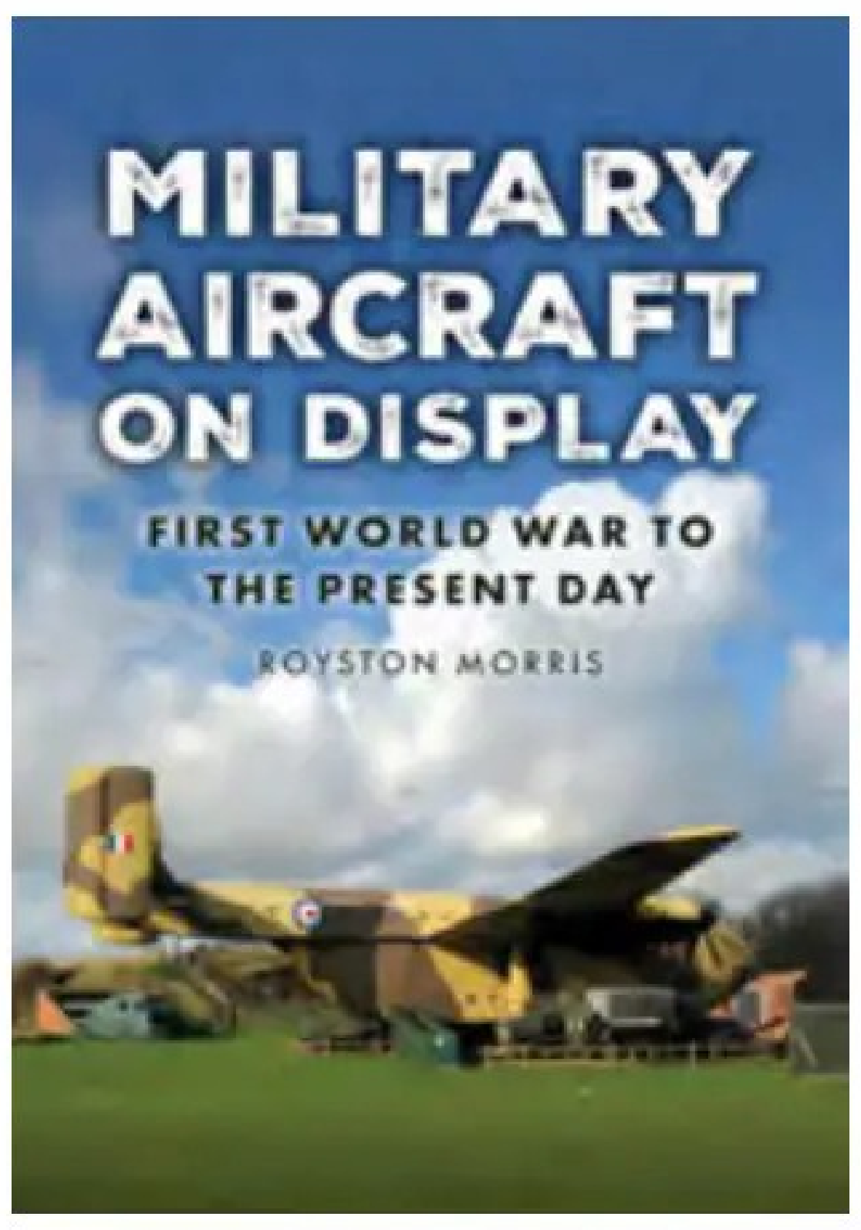

This book appears aimed at the same market as Crécy's hardy perennial *Wrecks & Relics*, although its remit is wider, allowing the inclusion of a few present-day types such as the F-22 and A400M, aircraft "which can be seen in the skies and on the ground in Britain". That said, most of the coverage is of aircraft in museums, under restoration or serving as gate guardians.

Each entry is typically accorded a half-page with a colour illustration and several lines of text. Photo reproduction is good, while the text is chatty, although no index is provided. The whole is easy to dip into, but it cries out for the attentions of a good proof-reader with the appropriate subject knowledge. The reference on page 89 to "RAF Brawdry" (Brawdy) is but a slip of the typing finger, while the table of abbreviations that shows AAC as "Army Air Cadets" will not go down well at Middle Wallop, but the description of the Boulton Paul Defiant as a "turret-fighter/interceptor jet" is, well, let's just say factually incorrect. For these reasons and more [including the cover picture of an aircraft not at its current location — Ed], it is difficult to recommend this title. ***DJC***

ISBN 978-1-3981-2379-3; 9.2 x 6.5in softback; 96 pages, illustrated; £15.99
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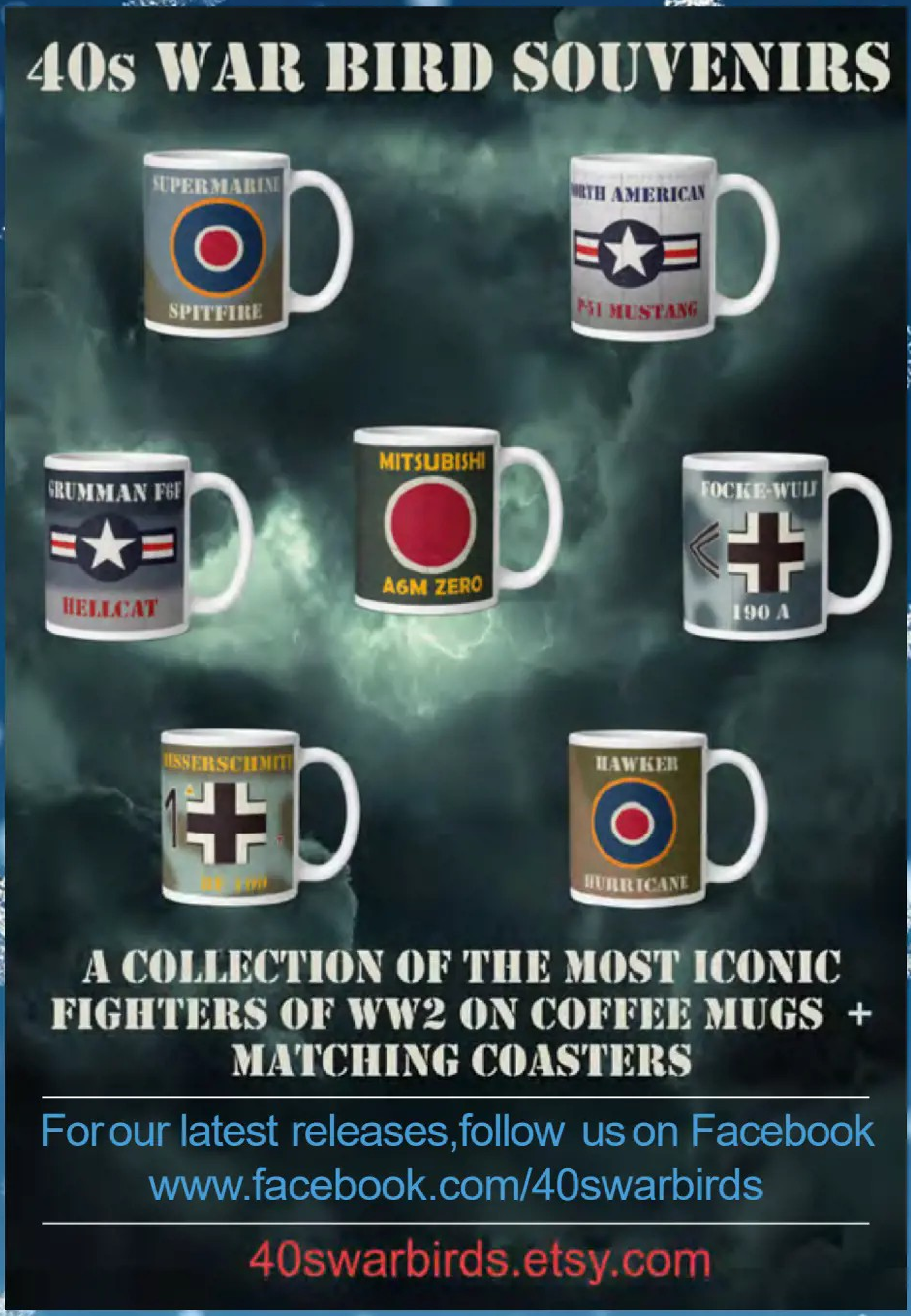
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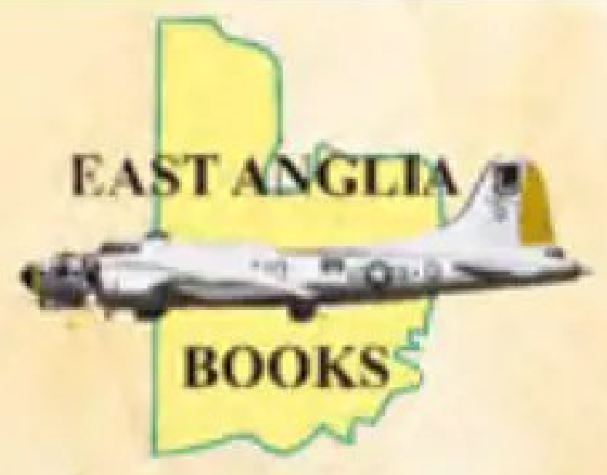

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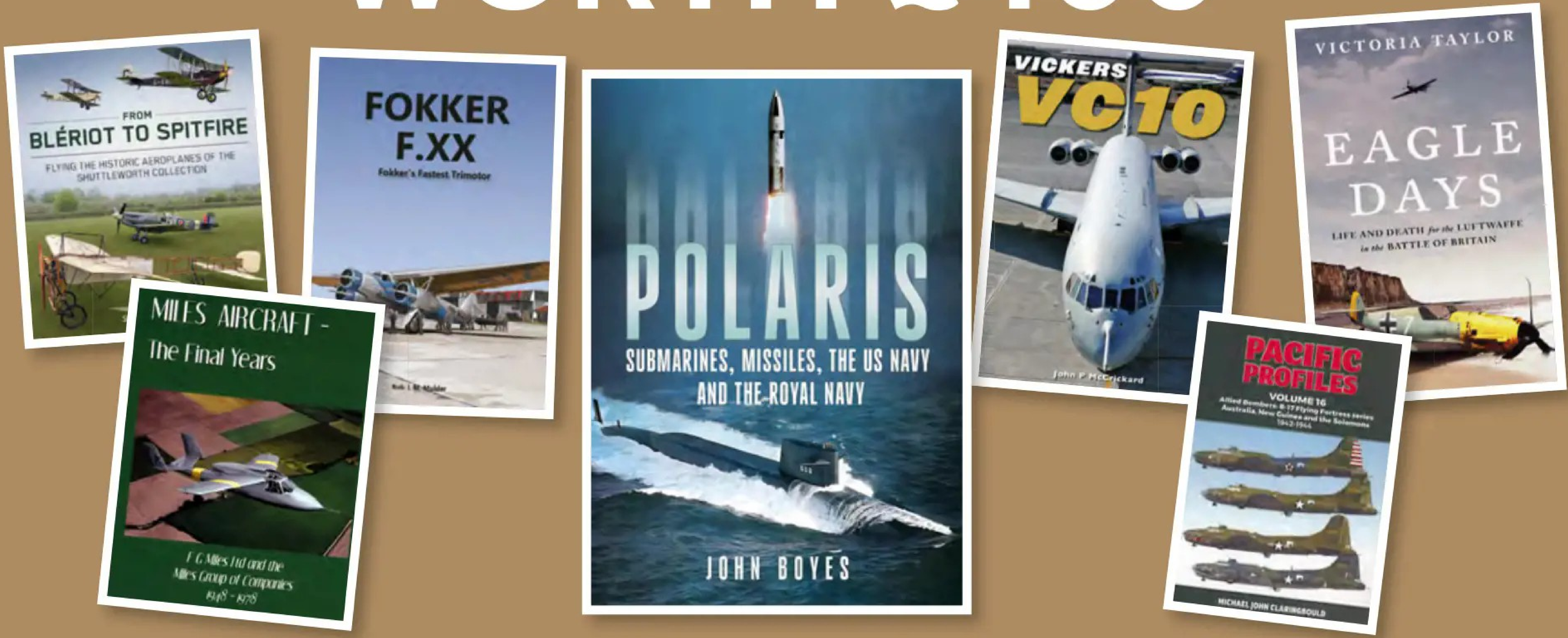
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